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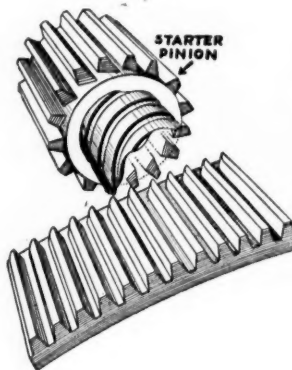
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AUTOMOTIVE INDUSTRIES

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VOL. XLVIII

NEW YORK—THURSDAY, MAY 17, 1923

No. 20

Transportation Coordination Demanded by Nation's Business Men

By James Dalton

TRANSPORTATION—the life blood of commerce, industry and trade. This was the central theme of the annual convention of the United States Chamber of Commerce in New York last week, the most successful and the most constructive the organization ever held.

Delegates gathered from every section of the country, chiefly for a consideration of means to make transportation more efficient. The big business men of the nation are more interested in genuine service than in cost. They do not begrudge a fair return for any form of carriage.

Coordination of rail, highway and waterway service so that there will be real cooperation was the most vital consideration of the convention and it was discussed in all its phases by leaders of thought who spoke with authority.

In these discussions the automotive industry played no mean part. Its spokesmen are recognized as broad-visioned men of affairs who are more anxious to promote the common good than their own selfish interests, realizing that future progress can be built solidly only on a foundation of good-will.

Selfishness, unhappily, has not disappeared from the transportation horizon and there were not lacking evidence that some of the interests involved construe cooperation to mean letting the other fellow help them.

THE big, outstanding fact remains, however, that the railroads must cooperate constructively if they are to retain private ownership and operation. This can mean only one thing—ultimately, for self-preservation if nothing else, they will have to accept the inevitable and give their earnest support to a constructive policy of coordination.

A survey of the whole transportation fabric which will bring recommendations which cannot be ignored and which must form the basis of reform, already is under way.

The committees which have undertaken this vital task are not dominated by the railroads. They include in their membership representatives of all forms of transport, financiers, farmers, labor, manufacturers, economists and publicists. Their personnel insures a workmanlike job.

In this survey full recognition has been given that young giant, the motor vehicle, which last year carried half as much freight as the railroads.

Shippers have recognized, if the railroads have not, that highway transport has become a great factor in commerce and that its importance will increase from year to year.

Some just program will be evolved for the absorption of individual transport into a coordinated system which will be a boon to the nation.

Even the railroads now concede that the truck can be an effective ally which will relieve them of their losses on short haul freight in congested terminal areas.

In the pages which follow AUTOMOTIVE INDUSTRIES presents a complete report of those phases of the convention in which the automotive industry is chiefly interested.

Revolutionary Transport Coordination Plan Is Well Under Way

Transportation conference set up by United States Chamber will work out unified system under which railways, highways and waterways will be welded into unified system.

AMERICAN industry has grown at an amazing pace, not because of the efficiency of the transportation system provided to move its products but rather in spite of the admitted inadequacies of antiquated methods, waste, extravagance and red tape traditions.

While expansion has been astoundingly rapid, it has been accomplished with enormous economic loss because the supply of transport has lagged far behind the demand. That is has been accomplished at all in the face of such obstacles is to the everlasting credit of the nation's business.

When it finally became apparent that no relief could be expected from voluntary action on the part of the carriers themselves, the shippers of the country, more powerful in the mass than any other single influence, called upon their leaders to set in motion some machinery which could be relied upon to bring permanent relief.

That was the genesis of the most revolutionary step ever undertaken to bring about practical unification of railways, highways and waterways for the movement of the nation's commerce. It matters little that the wheels were set in motion by the Washington administration from motives smacking somewhat of politics. The results will be the same.

Unless the railroads provide a more efficient service they are threatened with Government ownership and operation, demanded by the rather radical legislators who will be so numerous in the next Congress. This fact became patent to Secretary of Commerce Hoover who long has realized the shortcomings of the transportation system, and he convinced President Harding of the need for some drastic action.

Realizing the perils of making such a movement political, the aid of the United States Chamber of Commerce was enlisted. There was no hesitancy in placing behind any constructive plan for the betterment of transport the full force of the most powerful business organization in the country. President Julius H. Barnes called a conference of leaders in all the fields of transportation and Hoover impressed upon the representatives of the steam carriers the seriousness of the situation which confronted them.

Cease Wailing and Give Service

They were told that if they were to preserve their properties they must cease wailing over their real and fancied wrongs and go to work wholeheartedly to serve the shippers who support them. He demanded coordination and cooperation. This was pledged unhesitatingly by the spokesmen for the automotive industry, who always have contended that motor vehicles should not be real competitors of the rail lines and that there was little real competition.

Such was the foundation upon which was reared pre-tentious plans for an exhaustive, non-partisan, unbiased survey of the situation which will lead to constructive recommendations which cannot be ignored either by

Congress or the carriers themselves. This work, which will involve an almost unbelievable amount of study, is well under way.

This brief survey of what has happened in the past three months is necessary to a clear understanding of what is being done and what is contemplated. No single industry has so vital an interest in the results as that which is engaged in the production of motor vehicles.

Following the trail of the transportation coordination movement is a rather difficult task, there are so many by-ways and blind alleys to avoid. It cannot be expected that trends of thought which have developed gradually over a period of many years can be shifted over night into new channels.

Consolidation of Interests Needed

Waterway advocates have jangled with the steam railroads since the advent of the steam line and have contended consistently that their interests have been starved by a niggardly government. Their opponents have fostered the belief that waterway improvements were simply a part of the Congressional pork barrel. Neither has been entirely right nor entirely wrong.

Steam and electric lines have cursed the motor vehicle consistently and persistently almost since its advent. They have shouted from the house tops about "subsidies" in the form of improved highways. They have wailed about taxes levied upon them to build roads for the enemies which were taking business from them.

The automotive industry alone has gone serenely on its way building and selling transportation, fighting fairly for its rights and basing its right to live on the economic service it was giving. Its leaders have protested that there should be no real competition between motor vehicles and those which run upon rails.

One of the most romantic chapters in the history of transportation is the story of the patient, laborious efforts of the far-sighted leaders of this industry to convince commerce and industry as well as the men engaged in other branches of transportation that the motor vehicle should be regarded as a supplement to their services rather than as a competitor for profits.

This long and steadfast battle has now been won in principle, although much work remains to be done in consolidating the positions taken. It constitutes the basis for the Transportation Conference which has been set up by the United States Chamber of Commerce to work out a program of cooperation and coordination.

There still are many reactionaries among the executives of steam and electric railroads who look upon the motor vehicle as an enemy, but there are additions almost every day to the ranks of those who are convinced the truck and bus can be used to advantage to relieve them of unprofitable business. These are the men whose counsels ultimately will prevail.

AUTOMOTIVE INDUSTRIES predicted in an editorial in its issue of Jan. 18 that:

"If agreement can be reached on the main points involved, and agreement does not seem far distant, there are no difficulties which cannot be overcome if representatives of the railroads and the automotive industry will get together around the conference table."

The conference table stage has been reached. Frank and fair discussion will solve almost any problem. The motor vehicle men have clear consciences. They know they are standing on a broad platform and that they are interested chiefly in welding highway transport into a coordinated transportation system. These men are not lambs, however, and they will not be devoured by any lions with whom they may come into contact.

Shippers Will Have Their Say

It will be the shippers of the country, in the last analysis, who will determine what form this coordination will take. They have suffered heavy loss in the past because of lack of transportation. They are perfectly willing to concede that the railroads have had a tough row to hoe for years, although they have not forgotten that the sins of the carriers were chiefly responsible for their drastic regulation. When they hear talk of "subsidized" highways they recall the subsidies given the railroads in the form of huge land grants. They even go back to the days when the public was given subsidies in canals. They seem to feel that some form of subsidy always has been necessary to promote a new means of transportation and probably always will be. Aviation has been given subsidies in other countries.

While the railroads profited in the long run from land grants and the automotive industry has profited from good roads, it is the people of America who have profited most. If they are willing to spend their money in the form of taxes for the development of transportation it is their own affair for they are footing the bills.

Most of the complaints of steam and traction lines against the motor vehicle have been based upon incomplete or incorrect data. The surveys now under way will demonstrate this fact. One after another electric roads are adding motor buses to their equipment. Railroad after railroad, especially short lines, is adding rail cars, trucks and buses. Store door delivery in congested terminal areas is becoming more and more common. Even the most reactionary of the railroad men admit that trucks can be used to advantage to relieve them of the expensive less than carload short hauls. They are beginning to believe that they can be employed also to reduce terminal expenses and obviate the necessity of spending huge sums for larger freight terminals.

An Undertaking of Paramount Importance

The Transportation Conference, therefore, is one of the most important undertakings in the history of the United States Chamber of Commerce, which has the habit of getting adopted the things it advocates. Barnes, the capable president, who will be re-elected, points with pride to the record of achievement, including the Federal Reserve system, tariff and taxation reforms, all of which it initiated.

The stand of the Chamber on the subject of transportation is contained in the following resolution:

"In 1920 Congress, through the passage of the Transportation Act, entered upon a new national policy with respect to transportation; a policy which is constructive and positive rather than merely restrictive; a policy which frankly recognizes that the public interest is paramount and equally as frankly recognizes the reciprocal duties and responsibilities of the public toward transportation agencies.

"To this policy the general public are responding

through the manifestation of an increasing confidence which makes available for the betterment of railroad facilities during the current year additional credit to an aggregate amount of one and a half billion dollars. The railroads now free to adjust themselves to this new policy are likewise responding and it is believed will soon be able to show increasingly satisfactory results which will still further justify investors in placing credit at their disposal, and also justify the expectation of increased efficiency in service which the public rightfully demands.

"That a broad, constructive program may be formulated looking to further progress, to insuring the constant and uninterrupted flow of commerce in the public interest, to the making of rate adjustments on a scientific basis equally just to the shippers, the carriers and the ultimate consumers, to enabling the carriers to provide necessary additional facilities and earn a fair return on their investments, and at the same time reasonably compensate all loyal and efficient employees, the Transportation Conference has been created under the auspices of the Chamber and has already made distinct progress.

"Discussions of the problems being considered by this conference have been the outstanding feature of the sessions of the Chamber. The annual meeting expresses gratification that this constructive work participated in by representatives of every group directly or indirectly interested, has been undertaken under the auspices of the Chamber, and with confidence looks forward to the early completion of the tasks of the Transportation Conference and the formulation by it of a forward-looking program for the systematic development and coordination of all forms of transportation facilities whether by rail, water or highway."

Motor Vehicles Complimented

Motor vehicles were mentioned in complimentary terms more frequently at this convention than ever before. There was nothing of tolerance in the references to them. Roy D. Chapin was one of the principal speakers at a general session and he delivered a noteworthy address outlining the importance to the nation of individual transportation. He described graphically how cars and trucks can be employed to the greatest advantage and declared their general use was due solely to the general public service they perform.

A. J. Brosseau, president of Mack Trucks, Inc., was re-elected a director, representing the Fabricated Production Department.

It was quite natural, however, that greater emphasis should be placed in the program or discussions of the needs of the railroads and how best they can be rehabilitated, especially in relation to credit, if investors are to provide the funds with which much needed betterments and expansions must be made. All phases of this subject were considered, but it is peculiarly a railroad problem in which the automotive industry has no greater interest than any other great aggregation of shippers anxious to obtain more adequate shipping facilities.

No attempt was made to conceal the fact that the carriers have lagged behind in the unprecedented industrial expansion of the United States. The fault is not altogether theirs and their earnings must be enlarged if they are to prosper permanently. It is felt, however, that adequate service will bring commensurate earnings.

Other subjects of deep interest to industry generally were considered at the convention, particularly the relation of European conditions to American prosperity. Willis H. Booth, vice-president of the Guaranty Trust Co. and newly elected president of the International Chamber of Commerce threw a new light on the repara-

tions problem when he said at the closing session of the convention:

"In the last analysis this reparations settlement must rely upon public opinion and support, particularly of possible creditor nations, for its value. Undoubtedly immense financial operations will have to follow the reparations settlement, and unless this settlement is of such character as to command unquestioned confidence, it is going to be a serious matter. Unless the terms are such that the average investor feels that peace and security in Europe is afforded for the next few generations a basis of easy credits has not been established, and this reparations financing may be a serious matter for the average business man; and he must be satisfied that the sacrifices which it is going to call for him to make are being made in the proper cause.

"These sacrifices will be engendered by the fact that the absorption of available credit in reparations financing may have the natural result of restricting to some degree the credit capacities at home, where the demand will be very great, with resulting increase in the cost of money, and so, as business men, the United States Chamber is under obligation to review very carefully whatever settlement is reached to see that the final functioning and the financial operations associated with it are such as to command the support of the business element in this country."

A noteworthy address was delivered by Robert Masson, director general of the Credit Lyonnais of Paris, in which he outlined the progress made by France in recovering from her war wounds and defending her against her detractors.

Lubricants Are More Important to Industry Than Gasoline Fuel, Oil Company President Asserts

WHILE it is conceivable that the internal combustion engine could continue to function with some other fuel if gasoline supplies were not available, it was the contention of Edward J. Prizer, president of the Vacuum Oil Co., that the wheels of industry must cease to function if there ever is a serious shortage of lubricating oil. In his address on "Petroleum in Industry," he said:

At the present time gasoline overshadows in the public mind all other petroleum products, but it is conceivable the internal combustion engine could function without it. In spite of the Eighteenth amendment, nature still distills ample supplies of alcohol, and in several foreign countries this product is coming into use, and in some of them, as France, for instance, by compulsory legislation.

An English chemist has produced a satisfactory grade of gasoline from coal, by distillation and cracking processes. Some at present unknown application of radioactivity may bring into use some day an entirely new method of propulsion. In any event, there are ample supplies of gasoline in sight for all requirements for a long time to come. The steady improvement in cracking methods employed by refiners is securing larger and larger quantities of gasoline from a given volume of crude oil.

However, as long as metal revolves on metal no lack of a separating and friction-reducing fluid is thinkable. Today the wheels of all industry the world over revolve upon petroleum. The day may come when the lubricating qualities of petroleum will be the real vital need of our civilization, and will have to be conserved with judgment and care, lest mechanical operation come to a halt for lack of a lubricating substance. The vast expansion of mechanical operation is calling for larger and larger

quantities of lubricants, and there is nowhere in sight any substitute for petroleum in this particular.

No one can prophesy when the saturation point for automobiles in this country will be reached. It is yet a long way off; for the demand grows as rapidly as road construction advances. Abroad the motor vehicle is at its beginnings. What it will become in time with a restoration of settled conditions and recovery from present poverty no one can imagine. It is not reasonable to expect that of the world's total number of motor vehicles some 84 per cent will long continue to be operated in this country alone.

Hydro-Electric Plants Need Petroleum

There will occur in the very near future, not only in this country, but universally the world over, a great development of hydro-electric power, for coal must be replaced by something less cumbersome and costly.

These plants are large consumers of petroleum products for lubricating and insulating purposes, and will call for ever increasing quantities of the special grades needed for their operation; and there is no product as yet discovered that will replace derivatives of petroleum for this use.

To keep abreast of the constant and rapid increase of demand the petroleum industry must ever seek new sources of supply. I am not one who believes the world will fail to yield a required supply, for where sedimentary deposits exist petroleum can be looked for. But I believe the day is not far distant when the United States will require large supplies from foreign fields to care for its home needs. Already an English competitor has boasted that in the not distant future America must reconcile itself to buying oil from English companies, and adds with some unction that the United States is well able to afford it.

The industry is facing this problem, as it has faced all others, with unabated courage. Not only is it scouring our own domestic territory with renewed zeal, notwithstanding the greatly increased costs of production in the remote and at present almost inaccessible new fields, but is reaching far out for concessions and opportunities in foreign countries, in order that new production may be secured and controlled by American capital for American needs.

Large as has been the capital demands upon the petroleum industry the last ten years, the outlook is for still greater expenditures in the near future. It will be an unfortunate and even disastrous matter if petroleum becomes a football of politics and the free play and unrestricted operation of the industry are hampered or throttled.

THE big business men of the nation who gathered here for the annual convention of the United States Chamber of Commerce appear to feel no alarm lest there shall be a break in the near future in the tide of prosperity. They are not blind to the dangers of inflation, however, and the caution which they propose to exercise will be one form of insurance against conditions which would bring a relapse. Amazement was expressed on all sides at the amazing industrial growth in the past two years. There now is no reference to 1913 as a normal year and it is realized normalcy must be based on post-war rather than pre-war standards.

Possibilities of Coordination Disclosed in Swayne's Report

Preliminary surveys made by Highway Transport Committee reveal means by which advanced methods can bring about marked economies while relieving pressure of freight.

SOME of the vast possibilities for the coordination of highway transport with railroad and waterway service were outlined by Alfred H. Swayne, vice president of General Motors Corp. in a preliminary report prepared by him as chairman of the sub-committee of the Chamber on the relation of highways and motor transport to other transportation agencies. The report follows:

The first meeting of the committee dealing with the relations of highways and motor transport to other transportation agencies was held in New York City, March 19, with practically all of its members present.

It was the unanimous opinion that the Committee should make a sweeping inquiry into the basic conditions underlying motor, electric, rail and waterway transportation with a view to first determining the facts and conditions as they now exist, and then to endeavor to correlate this data and present such conclusions and recommendations to the general committee as might be found sound.

With this in mind, the general committee was organized into three sub-committees. The first of these, headed by Arthur T. Waterfall and comprised of Messrs. Miller, Fort, Gadsden and Matthiessen, was given the task of reviewing the field of motor use outside of the terminal area.

The second, headed by William Lyford and including as members Messrs. Childress, Wright, Banham and Raymond, has to do with motor use inside the terminal area, while the third, of which Mr. Gadsden is chairman and Messrs. Fenner and Waters the other members, is charged with an examination into the legal aspects of highway transport in its relation to other carriers.

In addition to these committees, the chairman was asked to have prepared a special report covering the question of the use of gasoline equipment by rail lines.

Staff men have been provided for each committee and each chairman was asked to proceed with meetings, the formulation of progress of work and the actual task of getting the facts together.

The work to date of each committee, taking them in order of their formation, may be briefly summarized.

Preliminary Outline Submitted

A preliminary outline was submitted by Mr. Waterfall to members of his committee, following which Mr. Waterfall and the chairman of the larger committee went to Washington to confer with T. H. MacDonald, chief of the Bureau of Public Roads, and Dr. H. C. Taylor, chief of the Bureau of Agricultural Economics.

As a result of this discussion, the government officials agreed to have assembled for the use of the committee all relevant data now in their hands bearing down upon the actual movements of motor vehicles over the highways. These studies will be supplemented by others which will go into the reasons for the use of the motor vehicle and the influence exerted by it both on other transportation agencies and on agriculture and industry.

Other studies dealing with actual costs of operation are to be made in the motor truck field by the Bureau of Public Roads, in the railway field by the Bureau of Railway Economics, and in the electric field by the American Electric Railway Association. Further material will be available from the New England Railroad committee. The facts so assembled will be correlated either by government officials or by the staff members of the committee and presented at a meeting of the committee which will be held in New York City, May 15.

Fields Will Need to Be Analyzed

Mr. Lyford's committee has already held one meeting at which a tentative progress report was prepared based upon the experience of the members, all of whom are experts in the field of terminal use of motors.

This report indicates clearly the fields which will need to be analyzed in order to bring out the underlying facts and as the work of the larger committee progresses, it is anticipated that basic studies somewhat of the type of the Port of New York Authority and the Chicago surveys, although not necessarily arriving at similar conclusions, may have to be undertaken.

The preliminary report does not consider in detail the question of the influence of terminal haulage methods upon city street development, and here again the question of making one or more studies of typical cases may have to be gone into.

One of the most interesting and important phases of the work of this Committee is a study of the developments in the handling of freight through the terminals by the collection and delivery systems that are in use in England and Canada. It is probable that much valuable knowledge can be gained from this study.

Mr. Gadsden has followed much the same line of operation as Mr. Waterfall. A tentative outline of the facts available or necessary was sent out to committee members and this has been followed by meetings of committee staff members and others to develop the procedure to be followed in compiling the facts necessary to the committee's work.

In this field, representatives of the National Automobile Chamber of Commerce have prepared outlines of studies into municipal regulation of common carriers on the highways, and John E. Walker, former tax advisor to the Treasury Department, is engaged in a study of rail, motor and electric taxation. The American Electric Railway Association is making investigations into the legal aspects of tramway use and the Bureau of Public Roads has under consideration studies of fact designed to bring out the physical and economic data underlying comparable motor and electric line operations.

Broad scientific investigations dealing with the relative causes of damage to the highways in their relation to construction, maintenance and transport costs will also be available from this government source.

From these statements it is apparent that a good deal

of progress has already been made by the sub-committees in their work of getting at basic facts. Such data as are available have been discussed by the members of the larger committee at a second session held in New York, April 10, and a third meeting has been set for May 16, when reports will be accepted, experts heard on various phases of the question and policies as to further studies discussed.

It is, of course, yet too early to speak in any but a general way of the work of the committee to this time. As the studies progress, however, it is evident that many controversial issues have been due largely to the non-existence of basic material. A notable instance which may be cited is that of the competitive long haul. Here studies made in Connecticut by the Bureau of Public Roads show that the use of the motor in trips of more than seventy miles comprises but 14 per cent of the total and of the 14 per cent, most of the movement is in the haulage of highly specialized commodities such as furniture or is due to rail congestion and embargoes.

Competitive Long Haul Disapproved

The representatives of the motor industry on the committee have emphatically disapproved of those purely competitive operations in the long haul which form the balance. Incidentally, they cite as an illustration of their dislike for long hauls, the heavy motor vehicle movement under power from factories for long distances over the highways. This they feel should belong to the railroads, but can be shifted only if the rail lines are granted financial ability to buy equipment or legal power to abandon those short haul operations which the railroad men say are unprofitable to the steam carriers, but which have been forced by the requirements for a continuous all year round service.

Something of the same question is found in terminal operations where there appears to be a general recognition of the need for practical solutions. The demand for increased facilities constantly brings the railroads face to face with heavy increases in land valuations which make further developments either very costly or entirely impractical. The question thus arises as to the practicability of moving terminals farther away from congested areas, leaving the delivery to a motor service.

Broad Field for Motor Truck

Isolated instances of this latter practice indicate that better service could be given to the public at the same cost if this freight were diverted to the highway, while the indirect savings to the manufacturer in lessened costs and to the taxpayer in lessened congestion of city streets, would be material. Unless some shift such as this is made, it appears that the rates on less-than-carload shipments will have to be revised in order to make the service at least pay its own way.

In the electric and motor field, some examples of advanced operations indicate that there is a broad field for supplemental use of the motor bus and electric railways and that some method of coordination is possible which will eliminate unnecessary competitive charges to the public, while still preserving the flexibility of service which the public is most interested in.

A more scientific use of all road vehicles would not only reduce railway terminal congestion, but, due to the higher load efficiency obtained, would also permit us to make one vehicle do the work now requiring three or more.

Conclusions based on studies of fact will be available within the next two months, while others will have to be delayed until the results of fundamental investigations now under way can be obtained.

The work to date has clearly demonstrated that there

is possible a correlation of transportation which will give every agency plenty of work to do and which will take care of the needs of the public, which is after all the end toward which we must aim.

Some of Nation's Leading Men Serving on Committees Which Study Transportation Problems

THE thoroughness of the studies which the committees will initiate and the value of the recommendations they will make are exemplified by their following personnel:

GOVERNMENT RELATIONS: George A. Post, New York, President, George A. Post Co., Inc.; William D. B. Ainey, Chairman, Pennsylvania Public Service Commission, Harrisburg; Thomas C. Atkeson, Washington Representative, National Grange; O. E. Bradfute, President, American Farm Bureau Federation, Chicago; Roy D. Chapin, President, Hudson Motor Car Co., Detroit; W. B. Cole, President, Nashville, Chattanooga & St. Louis Railroad, Nashville, Tenn.; Samuel O. Dunn, Editor, Railway Age; Joseph S. Frelinghuysen, former senator from New Jersey; Howard Heinz, H. J. Heinz Co., Pittsburgh; Walker D. Hines, former head of the United States Railroad Administration; Hale Holden, President, Chicago, Burlington & Quincy Railroad; Thomas C. Meredith, former Secretary of Agriculture, Des Moines, Iowa; Judge Edwin B. Parker, Washington, D. C.; L. E. Sheppard, President, Order Railway Conductors, Cedar Rapids, Iowa; Samuel M. Vauclain, President, Baldwin Locomotive Works, Philadelphia; Paul M. Warburg, International Acceptance Bank, New York; Daniel Willard, President, Baltimore & Ohio Railroad.

RAILROAD CONSOLIDATION: Carl R. Gray, President, Union Pacific Railroad, Omaha, Neb.; Henry Bruere, Vice-President, Metropolitan Life Insurance Co.; J. A. Carpenter, Vice-President, Kansas City Chamber of Commerce; Clyde Dawson, attorney, Denver, Colo.; W. N. Doak, Vice-President, Brotherhood of R. R. Trainmen; Howard Elliott, Chairman, Northern Pacific Railroad; John E. Oldham, Merrill, Oldham & Co., bankers, Boston; H. A. Palmer, Editor, Traffic World, Chicago; Samuel Rea, President, Pennsylvania System; G. W. Simmons, General Manager, Simmons Hardware Co., St. Louis; A. W. Smith, Special Counsel, United States Railroad Administration, Washington; John Wallace, agriculturist, Des Moines, Iowa; Thomas Wilson, Wilson & Co., Chicago.

READJUSTMENT OF RELATIVE FREIGHT RATE SCHEDULES: F. A. Delano, Washington; H. M. Adams, Vice-President, Union Pacific R. R.; Sydney Anderson, U. S. Representative, Chairman, Joint Commission for Agricultural Inquiry, Washington, D. C.; Dr. Frank App, Trenton, N. J.; Joseph M. Belleville, Chairman, Executive Committee, National Industrial Traffic League, Pittsburgh; B. Campbell, Vice-President, N. Y., N. H. & H. R. R.; Edward Chambers, Vice-President, Atchison, Topeka & Santa Fe R. R.; Archibald Fries, Vice-President in charge of traffic, Baltimore & Ohio Railroad; E. J. Frost, Vice-President, William Filene's Sons Co., Boston; W. G. Gerhardt, Vice-President, Bush Terminal Co., New York; Dwight B. Heard, Phoenix, Arizona; Frank F. Henry, Washburn-Crosby Company, Buffalo; George H. Ingalls, Vice-President, New York Central Railroad; C. S. Keene, Vice-President American Tobacco Co.; Alexander Leggee, President, International Harvester Co., Chicago; W. C. Maxwell, Vice-President, Wabash Railroad; D. B. Robertson, President, Brotherhood Locomotive Firemen & Enginemen; A. R. Smith, Vice-President, Louisville & Nashville Railroad; C. E. Spens, Vice-President, C. B. & Q. R. R.; P. C. Sprague, Traffic Manager, M. A. Hanna Company, Cleveland; Theodore F. Whitmarsh; Francis H. Leggett Co., New York; J. G. Woodworth, Vice-President, Northern Pacific Railway.

RELATION OF HIGHWAYS AND MOTOR TRANSPORT TO OTHER TRANSPORTATION AGENCIES: A. H. Swayne, Vice-President, General Motors Corp.; W. J. L. Benham, Traffic Manager, Otis Elevator Co.; L. W. Childress, President, Columbia Terminals Co., St. Louis; D. C. Fenner, Engineer and Manager of Public Works Dept. Mack Trucks; Gerrit Fort, Vice-President, Boston & Maine Railroad; Philip H. Gadsden, Vice-President, United Gas Improvement Co., Philadelphia; W. H. Lyford, Vice-President, Chicago & Eastern Illinois Railroad; R. H. Matthiessen, President, Motor Haulage Co., New York; John D. Miller, President, Dairymen's League, New York; H. H. Raymond, President, Clyde Steamship Co.; Arthur Waterfall, Vice-President, Dodge Bros. Automobile Co., Detroit; Dr. Henry J. Waters, Editor, Kansas City Star; R. C. Wright, General Traffic Manager, Pennsylvania Railroad.

DEVELOPMENT OF WATERWAYS AND COORDINATION OF RAIL AND WATERWAY SERVICE: W. L. Clause, Chairman, Pittsburgh Plate Glass Co., Pittsburgh; Major General Lansing H. Beach, Chief of Engineers, War Dept., Washington; Charles P. Craig, General Manager, Great Lakes, St. Lawrence Tidewater Association, Duluth; Dr. Emory R. Johnson, Dean Wharton School Finance & Commerce, University of Pennsylvania; C. H. Markham, President, Illinois Central Railroad; T. C. Powell, Vice-President, Erie Railroad; M. J. Sanders, Leyland Line, New Orleans; Harvey J. Sconce, Sidell, Ill.; A. B. Shepard, Jones & Loughlin Steel Co., Pittsburgh; George A. Tomlinson, President, Duluth Steamship Co., Cleveland; General E. H. Woods, President, Kentucky Farm Bureau Federation, Lucas, Ky.

The session of the transportation and communication department at which progress reports were made by the sub-committees appointed to survey all phases of transport coordination was one of the most important as well as one of the most largely attended group meetings of the convention. It was evident that business men generally

WANTED—A National Economic Program

"YOU meet at a time when all about you the air is filled with doubt and divided counsels," said Lewis E. Pierson, president of the Merchants Association, in welcoming the delegates to New York. "If times were bad, if business were depressed, if we faced stagnation and unemployment, this doubt and division might be expected, but our country today is prosperous. Our factories are busy, our merchants active and our people are employed.

"Yet with every indication pointing to prosperity, present and continued, we find business hesitant, labor restless, and the nation as a whole divided into groups and classes, each seeking to perpetuate its own prosperity without regard to the prosperity of the nation as a whole.

"The farmer who has been selling his surplus crops to Europe, the manufacturer to whom the post-war changes brought new markets and diminished competition, and the worker whose wages were raised to new high levels, are alike apprehensive that in the readjustments that lie ahead their interests may suffer, and their post-war advantages be lost.

"There lies the explanation of the doubts that assail us in the midst of our prosperity, the excuse for the restlessness and division that make us question the continuance of our good fortune. Each group and section of our people are groping for a separate program of their own to guard and conserve their separate interests because they can discover no signs of a broad national economic program calculated to carry them and the nation as a whole through the readjustments they believe to be inevitable.

"You are in a position to appraise the measures best fitted to maintain the present level of our national prosperity. You can weigh the relative merits of all the proposals that have been advanced, and from them evolve a program which will serve the common interests of all. For a multitude of diverse and conflicting aims, you can substitute a single objective. For class and sectional policies, you can substitute a policy that will be national in its scope. Voicing the needs of the entire country your conclusions will receive the attention which the importance of your deliberations warrants.

"New York believes with you that the true prosperity of the nation is to be sought through policies and measures which consult the general good rather than the advantage of any class or section. It realizes, as you do, that America can never be truly prosperous while the rest of the world is embarrassed and depressed. It conceives, as you do, that no artificial panacea can be conjured up to restore the normal processes of world commerce, but that progress must be achieved as always through adherence to the natural and inexorable laws of economics. It holds with you that civilization is not to be preserved and advanced save by common devotion to hard work and high ideals."

are keenly interested in the committee work and that they take a broad view of the whole transportation question.

One significant point was that they seemed to take no umbrage at oft-repeated intimations that there should be no general revision of the freight rate schedule and that the carriers are entitled to larger earnings. There is evident a strong feeling of sympathy for the railroads. This was evidenced by the adoption of a resolution which said:

"Whereas the railroad executives, inspired by an abiding faith in the American people, have authorized the expenditure of \$5,140,000,000, which insures a marked advance in railroad progress, and will contribute largely to the prosperity of the country, and

"Whereas this expression of faith marks the advent of a new era in transportation development,

"Therefore be it resolved that the Chamber of Commerce of the United States urge upon its members and civic bodies and the public in general a united effort to quickly restore our great arteries of commerce, the railroads, to a sound and profitable position in the forefront of American business."

The progress reports were followed with keen interest. The first, that on governmental relations to transportation, was read by Chairman Post. He said he was betraying no confidence in announcing that his committee was opposed to government ownership and operation of the railroads. This declaration brought a round of applause. One subject which is being given careful study is the trans-

portation act of 1920 and if defects are found in it remedies will be suggested.

Gray of the Union Pacific, who also acted as chairman of the meeting, read the report on railroad consolidation. Its studies thus far have indicated to the committee that popular belief that marked economies in operation would follow consolidation was much exaggerated. The influence unification would have on the system of rate making was held to be a controlling factor. There will be a freer flow of traffic from one line to another but the principle of competition will be preserved.

The railroads would give the public convenient and efficient service, Gray declared, if they were permitted to charge rates which would insure an adequate return and interest investors.

In his report on readjustment of freight rates, Delano asserted that increases in railroad rates have not kept pace with the rise in commodity prices but that they cannot be expected to follow the rise and fall in commodities. He added that there is apparently no demand for a general reduction in rates. He attributed to economic conditions over which the carriers have no control, the complaints of farmers in relation to high rates.

In introducing Swayne as chairman of the highway transport committee, Gray said that as a railroad man he was rather jealous of the unanimity of action on the part of motor interests and their broad minded attitude on the subject of transportation. Swayne's report in full will be found on pages 1063 and 1064.

Highway Transport's Astounding Growth Based Upon Service to Public

Motor vehicle meets universal human need and that is only basis upon which any form of transportation can survive, Chapin avers. Shows how steam and electric lines can supplement facilities.

By Roy D. Chapin*

Chairman of the Board, Hudson Motor Car Co.

HOW many of us have consciously observed the influence which the motor, be it passenger car or truck, has already had upon our lives?

The farmer chained in isolation, like Prometheus of old, has had his shackles struck down by the arrow-like flight of this modern weapon of Hercules.

The man toiling in the city, his eyes intent upon a distant day when he might retire to the pleasures of country life, sees the goal placed immediately before him.

Old inhibitions are blotted out. We look forward to an existence which, possessing all the advantages of the city, carries with it the flavor of the open country.

Can we doubt but that, as we gain physically, our mental processes will be quickened, our contacts broadened?

How many sitting in this audience have noticed the growth of the small community center, the chain store, the neighborhood movie, the branch bank? Would these centers have been possible fifteen years ago? Certainly they did not exist then. Do they not carry with them indications of great changes in our ways of life?

How many have paused to reflect upon the actual saving in life made possible by this new transportation, particularly in agricultural areas? Not only has the physician's zone of service been immeasurably broadened, but the hospital has been made far more accessible.

How many have noted the perceptible shift in our rural educational methods due to the ease with which the modern motor bus picks up the children for miles around and carries them to the central consolidated school?

Yet these are but a few of the many sociological changes which are taking place on all sides of us and which have been made possible only by the advent of this new unit of transportation.

New Business Created

If we turn to the economics of this movement, we are perhaps on more familiar ground. The influence which has already been exerted in quickening industrial enterprise, in creating new business for other transport carriers, in providing labor with an immense new reservoir of employment in the manufacture of the vehicle, the highways, and of the materials used, is readily discernible and easily understood.

The milk which we drink at the breakfast table is the fresher because of the motor delivery back of it. The emergency call for food to take care of the unexpected guest is met by the grocery store truck.

From the new born babe just leaving the hospital, to him who is setting forth on the last journey, we all

*Abstract of address on "Cooperation between Motor and Railroad" at general session of the Chamber of Commerce of the United States in New York.

travel today at some time on motorized wheels and whether we know it or not, those wheels are quickening the social and economic pulse of America.

It is no accident of circumstance, then, which has made the motor industry the first industry in volume in the United States. Not only is it the largest exporter, but it is the third largest manufacturing freight user of our rail lines.

It is simply the plain, homely fact that the motor car meets a universal human need, and, because it does, it has become as President Harding has termed it, "an indispensable instrument in our industrial, social and political life."

It is important that we understand these facts before we attempt to analyze highway transport in relation to other agencies of transportation.

Understanding Before Legislation

It is doubly important that we understand the place of the motor vehicle before we attempt regulation, taxation, or any of the other restrictive measures which are a part and parcel of government. Important, because unless we use care we may defeat a human need, we may deny the masses their rights as individuals to personal transportation.

Turning, then, to the immediate question before us today, that of a coordination of all our facilities of transportation, it seems to me that the one dominant theme which we must keep in mind at all times is *service*.

In any discussion of transportation, service must be particularly emphasized because, after all, the only function which any agency of transportation performs and the only interest which the public has in it is service. The form or type of carrier used is secondary to the demand for efficient and completed transportation. Even cost is secondary because, after all, cost is but an element in service, and efficient service is always the least costly in the long run.

The question raised by the average citizen when he thinks of transportation is not one of priority or modernity or any other shibboleth, but "what is the best way to go from where I am to where I want to be?"

The answer to that question is the only one which will be accepted in the long run by the American public.

Our one great difficulty has been that we have grown at such an astonishing rate that our facilities have lagged far behind.

It is apparent, then, that what we should be concerned with is a definite effort to make each of the systems of transportation complementary to the other. Duplication is not desirable if wasteful. There is a field for each form and the public will demand that form which can give the best service.

Generally speaking, transportation may be divided into

WE of America stand in the transition stage of the greatest development of transportation in all of the history of the world.

In the past it has been said that transportation has been the pawn of kings in shaping the course of empires.

Today it has become the tool of the individual in working out the problem of the family.

The twelve million and a half motor vehicles owned by Americans are the agency for a peaceful revolution no less potent than those more warlike symbols of progress of the past.

New forces have been created through its use which are bringing us to new customs. Tradition bows to the genius of the present. Another instrument has been devised for the advancement of our civilization.

long and short hauls, either of which presents problems mutual to railway, electric, water and motor agencies. A third question, that of short haulage within congested terminal areas, appears to be restricted to the motor and rail. Our task is to evaluate the service each agency can render the public in these fields.

Truck Field Supplementary

The most impressive fact which any survey brings out is that the field of the motor truck is essentially supplementary, usually for short hauls, and conversely that the cost of railroad haulage decreases per mile as the length of the trip is increased.

Surveys made by the Bureau of Public Roads and the State highway department show that of the total motor truck traffic in Connecticut over a given period, 36 per cent was hauled a distance of but one to nine miles; 31 per cent was hauled from ten to 29 miles; 19 per cent was hauled from 30 to 69 miles, and the remainder, around 14 per cent, was hauled more than 70 miles.

If we go a step farther, we find that 81 per cent of the movement originated in the State and 84 per cent had its destination there, leaving but an insignificant scattering tonnage from and to points representing more than a purely local movement.

Another point worth mentioning is that while low grade high bulk commodities are a major portion of the rail movement, the truck movement is largely made up of less-than-carload commodities of high value or perishable contents. So that there is little or no conflict over carload shipments. The contest is between less-than-carload express and motor.

An examination of these figures gives us a clue to the future field of freight motor transport in relation to other agencies. Here is a developed traffic area where the total highway transport tonnage now probably reaches 3,500,000 tons a year. It is evident that one-third of that traffic must be simply a haulage from point of origin to a railhead or a purely local delivery. It is evident that two-thirds of that traffic moves less than 30 miles. Of this a larger portion is again to or from railheads and the remainder is a short haul movement, which leading railroad men say should be turned over to the motor truck.

The final item, that above 70 miles, is a minor percentage. Part of it is due to the haulage of special commodities, such as furniture, where packing, handling and breakage charges would make the movement by rail more costly; or again, due to rail embargoes or congestion, which makes the overhead saving in time to the merchant so great as to overcome the primary charge.

From these statements we may reasonably conclude, then, that the actual competition between rail and motor

carriers today is negligible, and that where it does exist it is largely due to the fact that the rail lines, suffering from undue regulation and cramped beyond reason financially, have been unable to provide desired facilities.

Relief for the railroads from the unprofitable short haul, or rate increases which will make this service pay for itself, seems to offer solutions to their difficulties. Perhaps use of gasoline equipment such as that now employed by forty railroads will serve in many cases.

As for the long haul, the plain fact is that the motor vehicle operator does not want and does not believe in it, save under exceptional conditions and usually these have been forced upon him.

Last year the motor industry, for example, was forced to drive away from the factories thousands upon thousands of motor cars for very long distances. Does any one believe that this was done from choice? Is it not apparent at once that only lack of rail facilities forced an uneconomic movement of this character. Incidentally, does this not show clearly the necessity for a prosperous, efficient rail system?

In the case of passenger travel, perhaps the steam lines would do well to consider long bus operations, particularly in scenic country, as a supplement to their rail facilities.

Terminal facilities, taken to mean all other than main line facilities, an authority has said, represent about 50 per cent of the total capital investment of the rail lines.

Much Railroad Practice Antiquated

Much present railroad practice is a heritage of the horse-drawn days of highway traffic. Then the railroads had to place their stations close together, close to industrial areas, and had to use freight cars over short spurs to facilitate freight movements.

Now consider the alternative. The railroads instead of coming into the center of the city for freight terminals could afford to move them well out, selling their downtown property. Not only would terminal charges be lessened but the charge to the average merchant would be lower since a trucking movement is necessary anyway and since his truck could clear more quickly if it did not have to go through crowded city streets or wait for hours at overloaded platforms.

Automatically, such an operation would release thousands of freight cars now used for deliveries to spur lines and the merchant would see his long distance cargoes coming through more quickly, with a resultant decrease in the interest charges on his investment.

City development would be permitted to proceed in a more orderly fashion, the danger of closed factories, due to delayed shipments of necessities, would be avoided and the wheels of commerce would move more smoothly.

Passenger traffic does not afford as critical a problem since, as one has put it, "the goods deliver themselves."

A store door service furnished by an organization entirely apart from the railroads, which would contract to take the goods from the producer's platform and place them at the gate of the consumer, using the rail or water for the long haul and the truck for the short delivery, seems to be one answer to which we are tending.

Store Door Service Cuts Cost

If we can progress to this point, then the shipper will have completed transportation involving the shortest length of time for each operation. He will find his inventories cut down, as he will no longer have to carry huge stocks on hand, the interest on goods in transit will be decreased, fresh goods can be constantly maintained and the greater turnover which naturally follows, of course, means a greater profit.

Similarly, the railroad will have its capital charges as well as operation costs reduced, and its equipment left free for use in the profitable long haul.

The questions of a closer coordination of motor bus and electric line in the serving of urban and interurban passenger traffic have afforded investors in traction stocks some anxious moments in the past, but the relations in these fields are now generally understood to be complementary rather than competitive, and with that point in mind, traction operators are now going into the bus field.

The electric line, either surface or subway, is the present great purveyor of mass transportation in the cities. Differences of opinion have developed among experts as to the future trend of this traffic. What is the field of the bus line on the main thoroughfares of cities? Have London and Paris something to teach us in this respect?

It is pertinent here to suggest that in any city the present public utility operating mass passenger transportation should be ever ready to give the public the particular type of service it wants, even though it may call for supplementing its equipment with a new medium. Care must be taken, of course, to protect the public against the evils of either unwise monopoly or too drastic regulation.

Government surveys in Connecticut, Tennessee, Maryland and elsewhere show conclusively that by far the largest percentage of traffic, even over our main highways, is purely local. Highways, parallel by other carriers in many instances, but still largely destined for "feeder" uses, must be improved in every State in order that the rail, water and electric lines shall realize their

full volume of travel; and more important, that the public shall derive the benefit of lowered transport charges which logically and naturally follow improved highways.

Another charge to which the public is now subject is excessive special taxation levied against transportation agencies, which the public as consumers of the commodities carried must pay.

Thus, for example, a study made from Government figures by John E. Walker, formerly tax advisor to the Treasury, shows that the rail lines contributed \$277,000,000 in taxes in 1921, and approximately \$304,000,000 in 1922. Of this amount some \$38,000,000 appears to have gone into highway funds. This seems to be a small levy for the development of "feeders," yet it is actually a special charge against transportation.

Motor users paid special taxes of \$340,000,000 in 1922, or the equivalent of nearly one-half of the total highway construction and maintenance bill of the nation, estimated at \$742,000,000. Of that amount, \$120,000,000 were discriminatory taxes levied by the Federal Government and exactly comparable to these railroad taxes which, also growing out of the war, were repealed by a recent session of Congress.

We take no issue with that portion of the remainder expended in the upkeep of highways, as we believe that the user should pay a fair charge for service rendered. But those taxes which are levied for construction or which do not go into highway work at all constitute the payment of general benefits through special levies which add materially to the cost to the public of this form of transportation.

Other large taxes are assessed against the electric lines and other carriers, yet inevitably the consumer must pay. In all these cases, then, we have an artificial barrier imposed in the way of efficient transportation at the lowest cost to the using public.

Inevitably, too, these barriers must be recognized as standing in the way of the most effective use of the motor by the rail and electric lines.

It seems further that the motor truck and the passenger car must take the place of thousands of miles of short line railroads which were originally built and operated only because the cheaper and more flexible medium was not in existence.

At once the question comes up of the availability of service. Can the motor operate the year round? The community cannot be left without service. In Connecticut the service is maintained, and snow removal is there, as it is in many other States in the winter belt, an ordinary item in highway maintenance.

Again, it is apparent that rules and regulations designed to cover old forms of transport cannot always be made to apply to a new form.

For example, there is the question of proper regulation of the motor. Of course, the vehicle should be required to comply with every regulation having to do with the safety of life, limb and property. That is fundamental. Overloading should not be tolerated, nor reckless driving. There should be reasonable restrictions to protect the highway, but there should also be a recognition that the highway is of service only as it is used and, accordingly, there should be a proper balance between road and vehicle as well as between vehicle and road.

Proper correlation of traffic is likely also to imply exclusive franchises in return for the regular service which the public has a right to demand.

There must be extended research and our universities and other educational institutions must train thousands of men for us, if we are to obtain adequate answers to this highly complex problem of completed transportation.

"THE possession of 2,500,000 miles of publicly owned highways, of which probably 400,000 miles are now hard surfaced roadways, open to freight and passenger carriage, suggests a new field of intensive study. The development in twenty years of the motor truck, until last year the tonnage actually lifted by this newly developed vehicle exceeded fifty per cent of the actual tonnage of all the railroads combined, suggests the necessity of properly relating this new form to the older lines, which must always be the backbone of long distance transport."—From annual address of Julius H. Barnes, president of United States Chamber of Commerce.

Business Men's Conference Urged to Settle Reparations Problem

Action close on heels of resolution adopted by International Chamber. Other nations expected to act soon. Confidence felt that agreement is possible if politicians can be kept out of meeting.

SETTLEMENT of the reparations problem and other questions which have kept Europe in turmoil ever since the armistice, is believed to have been brought measurably nearer by the action of the United States Chamber of Commerce at its closing business session in unanimously indorsing a resolution calling for the convening of an international economic conference made up of business men and not politicians.

While the language of the resolution is diplomatic, it is known that the big business men of the nation expect a conference which will be comparable in importance and scope with the arms limitation conference held in Washington at the invitation of President Harding. Other countries have suggested that it be held in the American capital, where an impartial atmosphere can be found.

Practically all Americans of prominence who have studied the reparations question on the field are agreed that it could be settled within a comparatively short time if the business men of the nations involved were placed in the saddle and the politicians unhorsed. Political rather than practical and economic considerations have governed thus far all steps taken in reference to reparations, and industry has arrived at the conclusion that the time has come for it to make itself felt. Difficulties which now appear insurmountable could be ironed out without great difficulty at a conference of business men, it is felt.

World Looks to the United States

The call for such a conference follows close upon the heels of a similar resolution adopted by the International Chamber of Commerce at Rome at the instigation of the American delegation. This resolution called upon the delegates of the various countries represented to advocate such a conference when they returned home. It is significant that the United States, to which the rest of the world looks for financial assistance, is the first to act.

The subject is one of importance to the automotive industry because European markets for its products cannot approach normal proportions until the reparations issue is settled once and for all upon a sane basis. The resolution which was adopted by the United States Chamber follows:

"The annual meeting joins with the recent sessions of the International Chamber of Commerce in recognizing that the continued economic disorder in a large part of the world is not only an obstacle to the establishment of permanent peace, elimination of unemployment, and restoration of normal living conditions, but also contains the menace of still further unhappy developments. There should be a just solution of these problems with the least possible delay.

"The belief expressed by the International Chamber that there should be a general economic conference of the nations interested, for the final adjustment of these problems, we also share, and we extend assurance that, so far as an American business organization may find opportunity for usefulness in supporting the plan of the Inter-

national Chamber to prepare the way for an economic conference the Chamber of Commerce of the United States will lend its assistance to the full extent of its power."

Another resolution of international importance which was adopted declares that the United States should adhere to the protocol providing for the establishment and maintenance of a Permanent Court of International Justice. It expresses gratification at the measures being taken by the American Government to that end.

Opposed to Government Shipping

In a resolution covering the subject of immigration the organization went on record as favoring the addition of a possible 2 per cent quota upon a selective basis to the present 3 per cent quota. It was held that this would care for proved economic needs without affecting our social standards, and that it ultimately would demonstrate the wisdom of placing all immigration upon a selective basis. It was contended that the principle of selection should be a controlling factor in any immigration legislation.

The Chamber declared itself in favor of an adequate merchant marine, but unalterably opposed to Government operation of ships. Relief of American shipping from inequality in world competition was advocated.

Regulation of public utilities by the States rather than by municipalities would represent retrogression, it was declared in another resolution.

Congress was urged to enact regulations governing the flight of aircraft and the airways over which they operate.

A resolution in relation to reforms in Federal taxation brought the only controversy on the floor. It failed to reaffirm specifically the Chamber's advocacy of repeal of discriminatory excise taxes such as those which burden the automotive industry more than all others combined. Representatives of the Jewelers' Board of Trade demanded that a specific call again be made for their repeal, but the amendment to the resolution proposed was laid on the table. The resolution as adopted follows:

New Tax Legislation Needed

"Under the administrative features of the law respecting income and other internal revenue taxes hardships and injustice may be caused taxpayers who act in the greatest of good faith. New legislation should be enacted which would enable a taxpayer to have a prompt and conclusive settlement of tax liability, to the end that business enterprise may not be embarrassed by the appearance of liabilities hitherto unknown to exist, and which have their origin in revised regulations or in a new interpretation of the law. Each taxpayer should likewise have an opportunity for an impartial hearing of questions arising between him and officials administering the law, and such a hearing should be possible without his undergoing great expense and inconvenience. We, therefore, favor the establishment of a court of tax appeals, to be appointed by the President, and composed of citizens not

connected with the Treasury Department, and we ask that such a body be authorized to sit in the various centers of the country convenient of access to taxpayers.

"Fundamental as these questions are to the rights of citizens, there are other problems of taxation which have far-reaching consequences. Existing situations tend to create classes of privileged persons who enjoy incomes free from taxation while withdrawing their money from the ordinary uses of industry and commerce, with consequences of inequity in shifted burdens of taxation and in other ways. Such a situation is caused by the possibility of issue of classes of securities the income from which is exempt from income taxes. Other problems are caused by the continuance of some war excise taxes, by rates of tax higher than were ever known outside times of actual war, and by provisions incorporated in the laws levying taxes, experience with which may have demonstrated results contrary to those which were intended.

"Many of these problems have had the earlier attention of the Chamber, and some of them have been discussed at this meeting. Their importance is obvious. The annual meeting is, therefore, gratified to learn that the Board of Directors has already taken action looking toward an immediate examination of the whole field of Federal taxation, and asks that the board request the committee on taxation, which it is about to appoint, to give special attention to the subjects herein mentioned."

Tariff Adjustment Is Needed to Permit Proper Expansion of Foreign Trade, Drake Says

"SEVERAL fundamental principles apply to the export of American manufactures," J. Walter Drake said in summing up his talk on "Manufactures in Export Trade." These fundamentals he listed as follows:

"Mass production permits competitive prices.

"Personal contact is needed with foreign selling agencies.

"World markets are essential to balance domestic commerce.

"The new tariff allows for prompt adjustment with nations which are favorable to us.

"The success of any American industry abroad adds to the prestige of the others.

"Accordingly, all business has in foreign trade a common cause."

Discussing these factors in more detail, Drake said in part:

In the recent trip of the American delegation to the International Chamber of Commerce, it was gratifying to note the marked evidences, in Europe and countries bordering the Mediterranean, of the improvement of conditions directly tending toward a resumption of international trade.

ROY D. CHAPIN pointed out in his address that motor users paid special taxes of \$340,000,000 in 1922 as compared with a total tax bill of \$304,000,000 for the railroads in the same year. Discriminatory excise taxes, comparable to war time railroad taxes recently repealed, constituted \$120,000,000 of the levies upon motor vehicles.

In discussing fabricated products, I know of no illustration more apt than the experience of the automobile industry in exporting.

As an article of commerce, the automobile suffered for a time the same disadvantage of being under suspicion as a fad or luxury that existed so long in our own country. This was not a fancy, but a very real difficulty, for it was based upon a total lack of comprehension.

Here I wish to call your attention to the fact that lies at the bottom of the huge production of automobiles in America: The motor vehicle furnishes a self-contained, inexpensive, reliable and adequate means of individual transportation for every man and his family.

Dominance in Foreign Field

In developing the foreign market for automobiles there was at first prejudice against the American product, resulting from design, quality, and in some cases, price. After a few costly and bitter experiences, our manufacturers awoke to the fact that as in all other mechanical devices, the foreigner must be convinced as to the reliability and merit of the product, and that without this background no dependable business could be built up. Therefore, forced by the coincident necessity of meeting similar resistance in the home market, our manufacturers proceeded to put their product on a plane of quality and dependability that within the space of two or three years resulted in its complete dominance of the foreign sales fields.

Along with this there was a development of service facilities so essential in the selling of any mechanical device and the establishment of parts depots.

It will perhaps be instructive to consider some of the chief aids in developing and maintaining the foreign sale of automobiles, as well as the difficulties that frequently affect this class of commodities.

Chief among the serious and irritating handicaps has been the tariff policy of this country. In some of the best foreign markets the attempt to exclude the American products for the enactment and the administration of tariff laws were, in effect, often a complete embargo. A great deal of this sort of thing came about through the American tariff and our policy in administering the tariff law. While the proposition of our tariff is one upon which there is wide difference of opinion, there can be no question but that it has had a drastic reflex effect in inviting or producing retaliatory action.

Effect of Tariff on Foreign Trade

We are all familiar with the provision of our present tariff law which, for the first time, gives adequate power to the President and the tariff commission not only to make a thorough study of conditions, but also to take into account the effect of our tariff upon foreign trade.

Under the present provisions executive action is now possible and the exigencies of trade may be met promptly.

Another equally fruitful source of failure in the foreign field is the lack of contact with our foreign buyers.

In foreign trade we must realize that we are engaged in a national activity. Every American manufacturer's article that goes abroad either sells, or, failing to do so, hurts the sale of other American fabricated products.

In developing this trade our influence should be directed not only to reaching out and securing the market for our product, but in building up a reputation for American goods that will be permanent and sure. We must maintain a standard of honesty in the fabricated product that shall become a by-word all over the world. A dishonest purveyor of American goods is as much a menace to American business as the traitor is, in time of war, to the nation's safety.

Spokesman for Railroads Bemoans "Subsidies" for Motor Vehicles

Markham of Illinois Central declares heavy trucks should be used only on short stretches of specially built highways. Appears to feel taxpayers' money is being wasted. Tells of railroad burdens.

CHARLES H. MARKHAM, president of the Illinois Central and one of the outstanding leaders of the carriers' executives, was the chief spokesman for the railroad group at the convention. His address on "Coordination of Railroads, Waterways and Highways" made it clear that he thinks highways should be used for the transport of freight only where they will not compete with the steam lines. He also dug up and attempted to resuscitate the old bogey of "subsidies" in highway building for the benefit of motor vehicles. Markham said in part:

Coordination is the antithesis of competition. Competition in transportation is desirable between railroads, between boat lines or between motor vehicle carriers on a basis of service, but competition between the railroads and a form of transportation that is sustained by subsidy is not desirable. It does not profit users of transportation as a whole, and it is inimical to the development of our national system of transportation on a sound economic basis.

Since there never is for any considerable time actual competition between water and rail carriers or between highway and rail carriers—as one or the other, when they are pitted against each other, takes practically all of the business—our national transportation policy should be, not to foster competition between one means of transportation and another, but to foster a coordinated development that will enable all means of transportation to work together to give all sections of the country the best, most adequate and cheapest service possible. Such a policy would avoid the wasteful mistakes of the past and promote the sound development of a national system of transportation. That is what we should be working for.

Public thought on this subject is sometimes confused by our neglect to consider as part of the cost of furnishing these other forms of service the expenditures made out of public funds upon the construction and maintenance of navigable waterways and hard-surfaced highways. The taxpayers' money that is expended upon inland waterways and highways is a part of the cost of the service provided by boat lines and motor vehicle carriers, just as the money spent upon their roadways is a part of the cost of the service provided by the railroads.

Unfair Advantage Over Railroads

The only difference at present is that railroads pay for the construction and maintenance of their roadways and have to charge rates to cover that expense, while taxpayers foot the bills for providing navigable channels and hard roads, and boat lines and motor vehicle companies consequently do not have to include such costs in the rates they charge. As competitors they have an unfair advantage over the railroads. In determining the true economy of transportation by waterway and by highway due consideration must be given to all items of cost, including the cost of navigable channels and the cost of suitable highways, however paid for.

The subsidy of competing forms of transportation from funds raised by taxation works a particular injustice upon patrons of the railroads. The taxes paid by Class I railroads last year amounted to more than \$800,000,000, as compared with less than \$100,000,000 in 1911. The railroads have no other source of revenue, hence the funds to meet their tax bills have to come out of the purses of their patrons—those who pay freight and passenger rates. Supporting competitive transportation upon an artificial basis by means of taxation at the expense of the railroads and their patrons is false economy.

Consider the cost of hard-surfaced roads that are ground to powder under the wheels of heavily loaded motor vehicles that are permitted to compete with the railroads in carrier service. Between 1910 and 1922 more than \$3,000,000,000 was expended upon the construction and maintenance of good roads.

Roads Primarily for Motorists

The operators of motor vehicle carriers contributed comparatively little to the costs of providing these highways, but they are doing more than any other agency to wear them out. Someone might say that the highways are a facility for the free use of the entire public; that they will be maintained, and replaced when worn out, regardless of their use by freight and passenger-carrying vehicles; and that to make the operators of motor vehicle carriers pay more for their construction and upkeep than anyone else would be unfair. That point of view fails to consider the greater destructiveness of the heavily loaded vehicles that are used in commercial transportation.

We should not continue to blindfold ourselves to the facts developed by the experiences which we have already had in the construction and use of hard-surfaced highways. Most of the hard-surfaced highways that are being constructed throughout the country primarily for the use of pleasure vehicles and other light traffic, such as ordinary farm vehicles, are not strong enough to stand up under the shock of heavy motor truck traffic. The operators of truck lines could not afford to pay a fair share of the damage caused to these light roads by their operations. It is equally clear that the taxpayers cannot afford to have themselves taxed to build these light roads, which are not intended for heavy-truck service, and then permit them to be damaged by that service.

The only practicable solution of this question, in my opinion, is the construction of comparatively short stretches of hard-surfaced roads designed and designated primarily for the use of motor trucks. These roads should, of course, be constructed only where commercial and other conditions are favorable to the use of trucks in transporting goods for short distances and where the saving, as compared with rail transportation, is sufficiently large to justify the extensive expenditures necessary to provide the kind of highways that can be used by such vehicles.

Motor trucks are well suited for performing transporta-

tion service in congested terminal areas where their expedited service from door to door gives them an advantage over the railroads in both speed and operating costs. In this field of service, which is a large one, I look for the use of motor vehicles to develop rapidly. The railroads cannot hope to compete for such business, and I believe most railway men will heartily welcome this development, for it will help to relieve the roads of their burdensome and unprofitable short-haul traffic.

The railroads are not opposed to the building of good roads elsewhere than for the use of trucks in congested centers. It is to the public interest (and whatever is to the public interest is beneficial to the railroads) that our highways be extended as fully as economic conditions will justify. However, it is not to the interest of the railroads nor to the permanent interest of anyone else that motor vehicles operated for commercial purposes shall tear up roads built by public funds without paying a fair share of their costs.

The railroads are not unfriendly to the use of motor vehicles for transportation wherever their use can be justified as economical and practicable, all things considered. My only point is that it is inimical to the public welfare to develop motor vehicle transportation upon a subsidized basis at the expense of the patrons of the unsubsidized railroads.

I am not opposed to water transportation wherever it can be justified on the basis of economy and practicability.

The coordination of our railroads, waterways and high-

ways demands that the three forms of transportation be surrounded with comparable restrictions as to rates, service and safety to the public. This applies particularly to the present chaotic condition of motor vehicle operations in many States. Fewer than half of the States regulate motor vehicle carriers at all. To allow motor vehicle transportation operated strictly as a public utility to run without regulation in competition with a railway service that is closely regulated is not only opposed to the American spirit of fair play, but is detrimental to the maintenance of adequate railway service, which the public must have.

A good deal of agitation in behalf of waterways is based upon the plea that they must be developed to relieve the railroads of the surplus of a load that has become too great for them to handle effectively. It is true that the railroads in recent years have not been able at all times to furnish promptly all the transportation service desired, but the development of competitive waterways would not solve the problem.

This does not mean that I would exclude the waterways from a place in the national system of transportation—only that I believe the case of the waterways should be decided only upon its merits.

More than any other human agency, the railroads have made possible the development of our civilization. It remains for us, who are the beneficiaries of this legacy from another generation, to safeguard and transmit to posterity an unimpaired, efficient railway system that will prove capable of the tasks expected of it in the future.

Assist Railroads by Developing Other Transport Methods, Advice of Newton

AN urgent appeal for the development of inland waterways was contained in the address of C. A. Newton, representative in Congress from the tenth Missouri district in an address on coordination of transportation facilities.

"The traveling and shipping public," he declared, "are not interested in railways or waterways or highways, as such. The thing they are interested in is a system of transportation capable of meeting the needs of commerce at the cheapest price obtainable, and that the system of transportation ought to be made up of railways, waterways and highways, not contending, but coordinated and cooperating.

"The greatest question before the country today is the solution of the transportation problem. What will the solution be? Will it be the building of more railway lines and of more equipment? If so, who is to furnish funds? Do you know of any capital in this country seeking investment in railway securities? How many railroads are there in the country whose stocks are yielding sufficient dividends to make them attractive as investments? You cannot extend railway lines and build equipment without funds. Capital will not supply the funds unless the investment is remunerative. How can you increase the earning power of the railways of the country unless you increase the rates, and the crying demand of the public today is for a reduction to the shipper in the cost of transportation.

"What will the solution be? The growth and development of the nation depends upon facilities, adequate to meet the commercial needs of the country. If capital will not invest in railway securities, shall we undertake, from the public treasury, to supply the necessary funds and again embark on another era of Government operation? By experience we have learned the cost of such an undertaking. Why not adopt a national policy of assisting the railroads by developing and using other methods of trans-

portation, especially so if such other methods can produce a cheaper service?

"We have expended in this country, during the past four years, through Federal and State appropriation, a sum in excess of \$2,000,000,000 for the improvement of our highways. These highways are making it possible to gather our products from the fields, the factories, the mills and the mines, and to assemble them along the great rail lines of the country, but the rail lines are annually becoming less able to distribute these products.

"If our waterways are improved, all heavy sluggish freight can be carried profitably by barge lines at a rate of not more than one-third and probably one-fourth of the best rate which the rail lines can afford to make. As it is today, we are suffering a shortage in transportation because hundreds of thousands of freight cars are engaged in the long haul of heavy, unprofitable freight from the interior to the seaboard, and the railroads are suffering not only because of this unprofitable business, but because thousands of their freight cars, engaged in this service, are lost upon foreign lines.

"Give us a great transportation system, made up of railways, waterways and highways, not contending, but cooperating. Let each factor of this great system supply a service at the lowest rate of which it is capable and let the shippers pay to each of them a rate which is compensatory for the service rendered and which will yield to the investor a reasonable return upon his capital. Yea, more than that, let us have a great system of transportation with highways developed so that the motor truck can go to the farmer and into his fields and assemble his commodities along the rail lines. Let us have railways, a larger unit of transportation to assemble these commodities, especially the slow, heavy commodities, along our inland rivers where the barge line, a still larger and cheaper unit of transportation, can carry them to distributing centers or to the seaboard of the nation."

Hooverisms: He Tells Why He's an Optimist

THESE were some of the high lights in the address of Secretary of Commerce Hoover before the United States Chamber of Commerce:

During the past few weeks there has been a distinct note of caution at our rapid industrial recovery. I have shared in this but some have gone so far as to fear we are entering a period of inflation or danger of collapse. Caution is the greatest safeguard to our continued prosperity, but caution need not be timidity nor exclusive of confidence and courage.

Increases in prices are a necessary accompaniment of business recovery. They are the vital stimulant to production.

We have no need to go into a period of inflation. We are undoubtedly in a plane of prosperity and we wish to hang onto prosperity.

The primary safeguard for continued prosperity will be continued willingness of our people to save their enlarged earnings, to resist extravagance and waste, to give full individual exertion. Our second safeguard rests upon the individual business man in today's well-developed sense of caution and resistance to the will o' wisp of higher prices and over-expansion and speculation.

THERE is a steadily growing sense of responsibility in American business—not in restriction of trade—but in the sense of collective thought and action in the broad strategy of employment, distribution and credits and of the interdependence of the whole fabric.

We must get our minds away from the notion that pre-war standards of living and volume of business would be normal now. Normalcy is a vastly higher and more comfortable standard than 1913.

There has been in the past decade an unparalleled growth of our industrial and commercial efficiency and our consequent ability to consume. I do not refer to that growth of productivity which should naturally be expected to accompany the increment of 14,000,000 in our population.

WE have been able to add to our standards of living by the more general distribution of many articles which were either altogether luxuries ten years ago or which were luxuries to a large portion of our population.

Some people have looked upon these additions of new commodities in services in the daily expenditures of our people as representing extravagances, but as a matter of fact they are no entrenchment upon savings. They are the product of better organized effort.

I do not share in the melancholy plaint that we ultimately cannot compete with Europe in neutral markets because of the handicap of our higher standard of living and wages.

We have gone a long way in overcoming the so-called handicaps of our higher standards through our great increase in efficiency. * * * That we sell 85 per cent of all the automobiles which move in international trade today and do so at real wages three times those of some of our competitors is proof thereof.

Store Door Delivery Is Remedy for Terminal Congestion, Says Banham, Authority on Traffic

STORE door delivery is the only immediate remedy for terminal congestion which does not involve capital expenditure too great to be contemplated at present, in the opinion of W. J. L. Banham, traffic manager of the Otis Elevator Co., who has made a deep study of the subject, and is regarded as an authority. He believes the motor truck should be used to supplant the antiquated methods now in use. In addressing the domestic distribution group on this subject, he said in part:

What is needed at the present time is closer cooperation between the shippers and receivers of freight and the rail carriers. The lack, however, of a definite plan to handle this class of freight has resulted in the freight remaining in the carriers' terminals to the extent that there is more or less freight congestion at all times. When the congestion becomes acute, freight embargoes are issued by the carriers, which result in the partial stoppage of freight movement to the terminals until they are cleared. It further results in delaying the carriers' equipment, which is needed at this and all times.

The present cost of handling freight through the terminals warrants the carriers taking all steps possible toward the prompt removal of freight from their terminals. No storage charge is sufficient to reimburse the carriers for freight held in their terminals, on account of the space occupied, the extra labor through consequent congestion, and the cost of shipments lost or damage caused by storage and congestion.

Canada Adopts Store Door Delivery

Canada has solved the terminal congestion problem by the adoption of store door delivery. The service is operated in Eastern Canada by the carriers under contracts or agreements, with the teaming companies acting as their agents. It applies to traffic rated in the Canadian freight classification as fifth class or higher, less than carload and carload, with the exception of bulk freight or articles weighing 2,000 lb. or over, per piece or package.

Tariffs are issued by the Canadian carriers for the teaming service and are filed with the Canadian Railway and Interstate Commerce Commissions as terminal charges. Rates named in the tariffs apply only within the areas embraced in what is termed cartage limits.

It is approximated that 95 per cent of the shippers and consignees in towns and cities where they have store door delivery use the carriers' teaming service, and it goes without further enlargement that this service must be a fairly satisfactory one to the public. The teaming companies handling such a large percentage of the traffic are enabled to arrange their loading and to utilize their equipment to the greatest possible extent.

What has been said covering the operation of store door delivery in Canada is equally true in England. At the present time the English railroads control a pick-up and delivery service, and for a number of years the cartage charge was included in the through rate. Recently, however, this has been changed and the English railroads are now required, when performing the pick-up and delivery service, to show this charge on their freight bills, separating it from the charge made for the line haul.

Compared with similar movements over the American railroads, the advantages of store door deliveries show clearly that the English lines have solved their terminal problem, and it proves what is to be gained by organized methods as against the disorganized methods now being used in handling terminal freight in this country.

The freight that, in my opinion, could be best handled through a store door delivery system would be that which requires station or platform service. In our large cities it would be necessary to create one or more zones, according to the hauling distances, varying rates to apply. This freight should be unloaded by the carriers in the terminals according to zones, and could then be turned over to the teaming companies and delivery made the morning of arrival.

The lack of system and cooperation between the carriers, shippers and receivers of freight, due to an indefinite system of handling in and outbound merchandise freight has cost the carriers and shippers millions of dollars per year, which the public is ultimately required to pay. The trucking expense to and from freight terminals is costing the shippers and receivers of freight enormous sums, the greater part being caused by delay and congestion. Eliminate these conditions and the result should be decreased terminal expense for the carrier, decreased trucking expense for the shipper, and the prompt movement of freight.

If we are to have a modern system of transferring freight, it will be necessary to use modern equipment. The motor truck holds out many advantages for the transfer of terminal freight, and under favorable conditions should be able to handle a great volume of freight which is now being hauled on horse-drawn vehicles due to the antiquated methods now in use. I urge most strongly that all shipping, teaming and carrier organizations take up this question with a view to solving the freight terminal problem, which today is slowing up the freight movement of the country.

Store door delivery is the only immediate remedy for terminal congestion which does not involve capital expenditure too great to be contemplated at present.

House Immigration Committee Favors More Stringent Rules

THOSE automotive manufacturers who contend that immigration restrictions should be less drastic because the country needs a larger supply of common labor, will find cold comfort in the statements made by Albert Johnson, chairman of the House Committee on Immigration at a meeting of the Civic Development Department.

He declared that President Harding has not changed his views with regard to the restriction of immigration and he added that "the United States is no longer an asylum for the people of the world." He asserted that "wholesale migrations of people to the United States has ended for all time" and that restrictions are likely to be tightened.

"Immigration quotas will open again July 1," Johnson said. "Immigration will boom for five months with the north countries of Europe sending their full shares for they know that the jobs and the wages are here. In my opinion the incoming stream will end the labor shortage but it will not end the demand for cheap labor."

"In spite of strenuous appeals from those who feel that the United States cannot develop its own common labor, I can assure you that the President has not changed his views. He wants prosperity to hit on all six cylinders, but he does not want prosperity to go tearing down the road at 90 miles an hour. Increase in wages is an important part of prosperity. A shortage of labor is not necessarily a shortage of laborers. If there is a corner in labor of certain kinds that corner cannot be broken by the sudden abandonment of the restriction law, or by the pouring in of the hordes from Europe."

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employed in the United States to work for everybody who will work is remarkable. It is a little more than normalcy. Restriction of immigration has played a full part in it; both capital and labor are winners, but the greatest gainer is the United States of America. Our fibre is being saved. We are cleaning house.

"This summer, perhaps, we could use some alien labor, but with it would have to come dependents, refugees and riff-raff. Who will say that the present gain would be worth the future cost?"

Cheaper Farm Transportation Can Be Found in Use of Truck, Federation President Declares

RECOGNITION of the increasingly important place taken by the motor truck in transportation as it relates to the farm, was given by O. E. Bradfute, president of the American Farm Bureau Federation, in an address on "The Farmer's Interest in Transportation," before a general session of the convention.

"The farmer's transportation problem begins right on his farm," he said. "It begins with his own wagons and his own trucks. Then, as the products start from his dooryard, until they reach a shipping point, he again has the problem of transportation. Consequently, the farmer is interested in his farm transportation, he is interested in his highways and trucks, he is interested in the railroads, he is interested in the rivers, the lakes, and even the

oceans. That is the field that is covered by the farmer's problem of transportation."

For freight transportation on the railroads, he declared, somewhere near \$4,000,000,000, farmers pay 55 per cent of the total, or more than \$2,000,000,000 annually. When the farmer's transportation costs on his farm and on the highways and other lines of transportation are added you can easily add as minimum \$2,000,000,000 more. In other words, the farmer's transportation costs are something over \$4,000,000,000 a year.

"The farmer demands cheaper transportation," he continued, "at least until such time as the prices of farm products reach a buying power relative to that of other products. If we must have cheaper transportation, and the railroads cannot possibly accomplish that, then the farmer is compelled to seek other means of transporting his product, and he is doing that in no small degree. As many of the railroads realize, motor trucks, particularly for local trade, are cutting in very heavily on the railroads, and I firmly believe that if trucking can be had at a reasonable rate, it will continue to cut in very heavily."

"In addition to that, the farmer is thinking more seriously than ever before of more water transportation. He knows that is a slow process, but he also knows it is a cheap process, and America need not be surprised to find a return not only to the waterways of our rivers and streams, but a return to the canal systems which already exist, which were built in olden times in many of our States. There may be a return and the construction of an enlarged canal system."

British "Wren" Monoplane Shows High Load-Power Ratio

RECENT British attempts to see how far it is possible to go in the direction of reducing the power required for flight to a minimum, have resulted in the development of the "Wren" monoplane. The plane was designed by W. O. Manning of the English Electric Co., and built at the firm's works to the order of the Director of Research of the Air Ministry.

The "Wren" is a machine built on glider practice. It is fitted with a standard A. B. C. two-cylinder opposed motorcycle engine of 398 c.c. capacity and nominal rating of 3 hp. This pure cantilever monoplane has a 37-ft. span, with the wing placed on the top surface of a rectangular section fuselage. The pilot is seated with his head in a recess in the leading edge of the wings.

The fuselage slopes downward ahead of the pilot and the engine which drives the propeller directly is carried on a tubular mounting raised from the nose of the fuselage. This mounting is thoroughly faired in and carries the fuel tank.

The undercarriage consists of an axle inside the fuselage with slightly less than half the wheels projecting through the bottom. The tail unit is of normal form; a fair sized fixed tail-plane as well as elevators.

Overall length is approximately 23 ft.; maximum height a little under 5 ft., and the propeller is of 3 ft. 9 in. diameter, turning at approximately 2600 r.p.m. on the ground.

In a recent test flight the machine got off the ground after 50-yd. run and quickly climbed to about 300 ft. It climbs at 41 m.p.h. with engine well throttled. The stalling speed is about 25 m.p.h. and maximum speed at least 50 m.p.h.

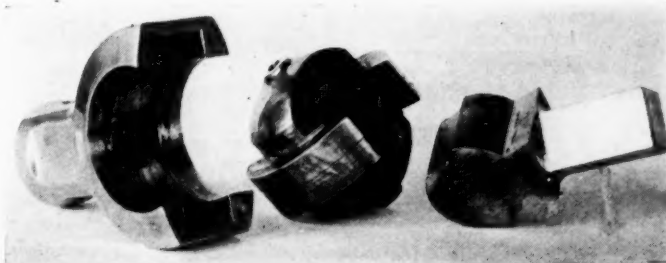
The machine weighs 210 lb. empty. Allowing 140 lb. for the pilot and 10 lb. for fuel and oil would give a

total weight of 360 lb. Consequently at 40 m.p.h. it is carrying 100 lb. per hp., a performance far in excess of the ordinary commercial plane. It is suggested that the "Wren" would make an excellent machine for training pilots.

Three-Piece Universal Joint Has Compact Design

A METAL universal joint of new design has been placed on the market by the Holmes Universal Joint Co. The assembly consists of three parts; two end pieces and a connecting center block which permits a 30-deg. angle of operation. The drive shaft end piece incloses the center block which in turn incloses the end piece connected to the power plant. Drop-forged, heat treated alloy steel is used for the end pieces and the center block is a manganese bronze die-casting.

The advantages claimed for this joint are its simple construction, wide bearing surfaces and compact design.



Holmes three-piece universal joint

Huck Double Reduction Truck Axle Employs Planetary Gears

Is designed also for bus applications. Spiral bevels are then used. Self-centering pinions engage with epicyclic gears. Latter are mounted on Hyatt bearings and roll on stationary ring. Wide spacing in wheel mounting a commendable feature.

A NEW axle designed for truck and bus work incorporating a double reduction mechanism entirely enclosed in a central symmetrical housing has been put in production by the Huck Axle Corp. A bevel pinion and gear is used for the first reduction. The second reduction is through an epicyclic train. The entire unit containing the bevel pinion and ring gear, differential and epicyclic final drive is mounted in a single cast Lynite carrier readily detachable from the rear axle and, consequently, accessible for service. There are also some individual features in the axle in connection with the mounting of the wheel, particularly as regards the wide space between the wheel bearings and in the brake mechanism.

Progress of the drive through the axle is from the pinion to the ring gear in the usual manner. The ring gear is bolted to the differential housing, which receives the drive. The differential in turn drives two short shafts terminating in pinions, which mesh with the two epicyclic gears. These gears mesh with stationary internal gear rings and rotate in an annulus carrying with them their supporting member. The axle driveshafts are splined to this supporting member.

The pinion, ring gear and differential are similar to those in conventional bevel gear axles, with the epicyclic train superimposed on this bevel gear reduction. The short stub shafts which are splined into the differential at the inner end, carry the driving pinions at their outer extremities. These pinions are not rigidly supported, but are allowed to float between the two epicyclic gears. The pressures on the pinion being balanced by the

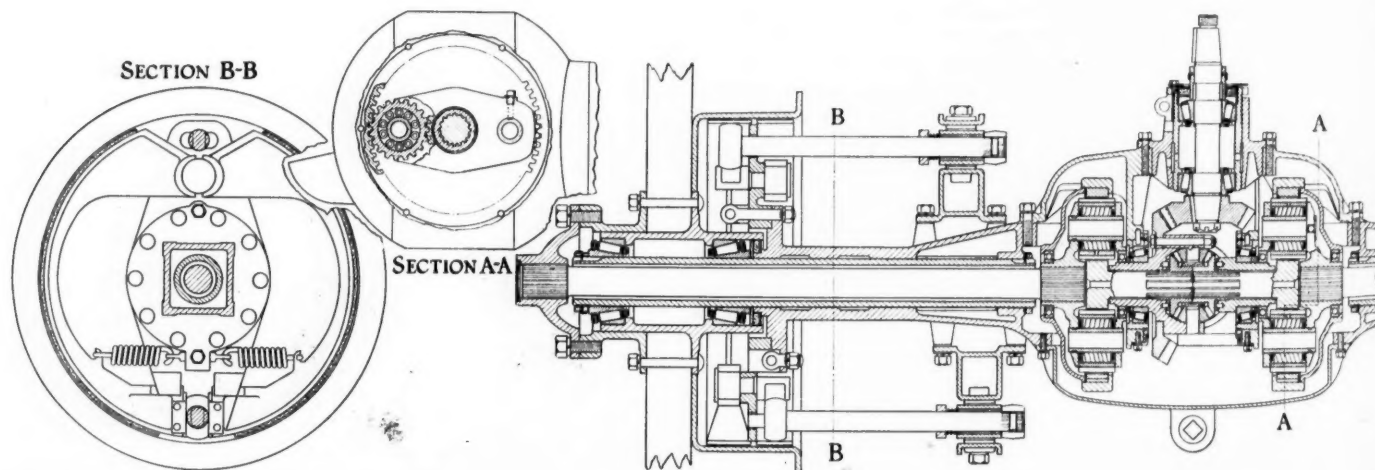
diametrically opposite epicyclic gears permits of this floating arrangement. The member carrying the pins upon which the epicyclic gears rotate and which is itself given a rotary motion, by the travel of the epicyclic gears around the stationary internal gear engages, by means of sixteen spline fittings, with the inner ends of the axle shafts. The drive is transmitted at the outer ends of the axle through another sixteen spline fittings at the hubs to the rear wheels.

Wide Spacing of Rear Wheel Bearing

Hyatt bearings are used for the epicyclic gears, annular ball bearings for the epicyclic member and all other bearings are Timken roller type. An exceptionally wide spacing of the Timken bearings is employed at the rear wheels, the central plane of the wheel being located between these two bearings.

The brakes are double internal expanding, rigid shoe type. The brake actuation is by means of a floating cam which permits equalized pressure to be exerted on each of the shoes, thus compensating for a condition in which one lining is thinner than the lining on the other shoe, and other conditions of wear which occur under normal braking operations.

There is also a device on the brake shoe return spring by means of which the brakes can be centered to compensate for unequal wear on the shoes. In operating this device, the brakes are held on while an operator loosens the screw, which holds the short link between the two return springs in place. As both of these springs are under tension when the brake is applied, when this



Huck rear axle for trucks and bus application. First reduction is through bevel gears and second through epicyclic train

screw is loosened the link member between the two stretched springs automatically locates itself in an equalized position when the retaining screw is loosened. The screw can then be retightened, after which the brakes are disengaged. The proper equalization between the shoes is then effected.

The truck axle is made in three sizes known as models 25, 35 and 50. Model 25 is for trucks of $2\frac{1}{2}$ and 3-ton capacity, Model 35 for trucks of $3\frac{1}{2}$ -ton capacity and Model 50 for trucks up to 5-ton capacity. In addition, Model 85 is a special design for buses with a wider, $75\frac{1}{4}$ in., track. The bus axle has the carrier of the $2\frac{1}{2}$ -

ton size with the brakes of the 5-ton size and is fitted with spiral bevel gears. The gear ratios available with the four axles are as follows:

Size	Ratios
$2\frac{1}{2}$ to 3 ton.....	6.65 to 1, 7.36 to 1, 8.45 to 1 and 9.31 to 1
$3\frac{1}{2}$ ton	7.98 to 1, 9.28 to 1, 10.44 to 1 and 13.5 to 1
5 ton	7.98 to 1, 9.28 to 1, 10.44 to 1 and 13.5 to 1
Bus axle.....	5.72 to 1

In addition to the reduction quoted on the bus axle, any of the reductions on the $2\frac{1}{2}$ to 3-ton size are available.

Geneva Universal Measuring Machine Adapted to Shop Needs

A MACHINE adapted to the needs of the machine shop or tool room in the testing of various forms of gages, such as plug, ring, disc, snap and thread gages, is manufactured by the Societe Genevoise d'Instruments de Physique, and is imported into this country by the R. Y. Ferner Co.

The chief feature of the machine is that the line standard is in direct line with the axis of the two contact points, so that errors arising from wear of the ways of the machine are almost entirely eliminated. First-order errors due to this cause are a direct function of the perpendicular distance between the axis of the reference scale and the line connecting the contact points; hence the value of reducing this distance to zero. The second-order errors, due to any lack of straightness in the ways, are equal to 1 minus the cosine of the angle by which the ways vary from perfect straightness, times the length being measured, which, for a 20-in. length and an error of 4 seconds, to which a good machine should be made, amounts to only 0.000,000,004 in.

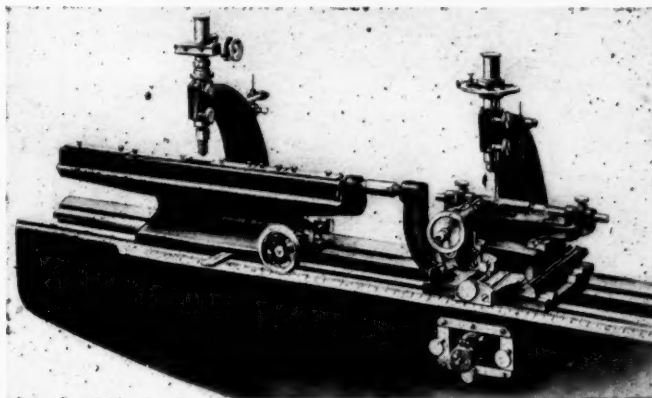
The line standard of these machines is made of 58 per cent nickel steel, which alloy has the same coefficient of expansion as steel, but is capable of taking a specular polish on which fine lines can be ruled without fear of rapid deterioration from corrosion. The scale is carefully protected by being mounted in a metal trough, provided with adjustable covers, so that danger of injury to the standard is largely eliminated.

One Standard Stops Disputes

The reference of all length-measuring equipment in a shop to one standard, as is possible with this machine, eliminates disputes arising from the use of various standards, which may differ in temperature coefficients, in temperature at which they are standard, in absolute errors at their standard temperature, in the accuracy with which they can be read, and in the change that may take place in them with use.

Another important feature of the Geneva Society machine is the ease with which it may be changed from a machine for making external measurements to one for making internal measurements. All that is required is to slip two special contact pieces over the regular contact pieces, and to give a three-quarters turn to a milled ring, which changes the pressure-indicating device to one indicating tension.

This indicating device consists of a knife-edge and lever system with a pointer moving over a scale, so that approach to the proper pressure or tension upon the contact pieces is easily observable. This device, with its graduated scale, one division of which is usually $1/10,000$ in., may also be used for the intercomparison of a number



Geneva universal measuring machine for testing machine shop gages

of pieces of the same nominal size, without the necessity of operating either the headstock micrometer or the micrometer screw of the microscope.

Various forms of supports for pieces under test, with tables mounted on steel balls to reduce friction, are provided. These include a support in which plug gages may be mounted between centers for a rapid test of various diameters of the gage in both dimensions; also special supports for thread gages, with micrometers for measuring the outside, effective and root diameters of the gage and a goniometric microscope for measurement of the angle of thread and for making pitch measurements. A special illuminating system is also provided for this measurement. Steel prisms and "best-diameter" wires are provided for use in the measurement of diameters.

We understand that the Edward Longstreth medal has been awarded recently to the Societe Genevoise by the Franklin Institute of Philadelphia for the invention and development of this measuring machine.

AN alloy steel containing 35 per cent of cobalt has a much higher magnetic strength than the tungsten, chromium and carbon steels now in use, according to W. R. Barclay, who presented a paper on the subject of Cobalt to the Sheffield Section of the Institute of Metals recently.

An alloy containing 15 per cent of cobalt and a certain amount of chromium gives almost as good results. According to Barclay, this indicates great possibilities in the development of magnet steels and will enable manufacturers of magnetos to simplify their designs and get along with less material.

Novel Cylinder Block and Crankcase in New British Light Car

H. R. Ricardo designs four-cylinder engine for Triumph. Masked inlet valve and slipper pistons are features. Two-bearing crankshaft, splash lubrication, and integral inlet and exhaust manifolds used. Bore is $2\frac{1}{2}$ in. and stroke is $4\frac{3}{8}$ in.

By M. W. Bourdon

THE Triumph Motor Co., which has the largest British output of motorcycles, approximately 300 per week, has entered the passenger-car industry with a light car having an engine designed by H. R. Ricardo. Originally it was the intention to produce this car at an unusually low price on British standards, but this policy was eventually discarded, and the car is to be in keeping with the Triumph motorcycles, which have a reputation as being high grade and of high price.

With economy in production originally in mind, Ricardo embodied certain features which were intended to meet requirements in this direction while providing points of advantage in other ways.

The most notable departure from normal practice is the design of the cylinder block and crankcase. The cylinder head is detachable and has nothing remarkable about it, but the four-cylinder block casting is distinctive in having the lower ends of its cylinder barrels inclosed within an upward extension of the aluminum crankcase. Studs screwed into the cylinder casting are used to hold the latter down to the top face of the crankcase unit, this method having been considered preferable to utilizing long studs passing up from the crankcase through cylinder block and head. Nor is advantage taken of the obvious opening for locating the valve stems and heads of the tappets within the crankcase, for these parts are in a separate valve chamber at the side of the crankcase extension.

Another feature lies in the use of the Ricardo masked inlet valve, the seat of which is below the floor of the combustion space and has a shallow parallel-sided pocket above it through which the head of the valve moves up before the induction period actually commences, and vice versa. The effect of this sunken seat is to enable a cam profile to be used which gives a slow initial and final move-

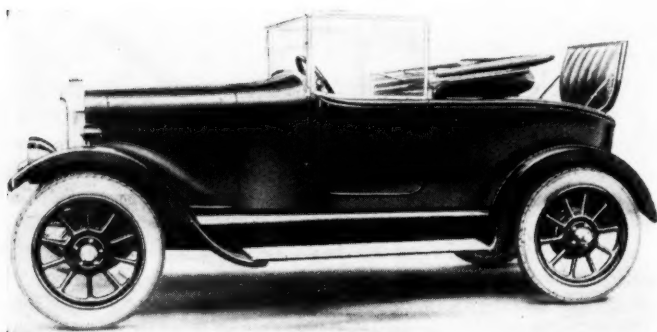
ment to the valve and yet provides a very rapid beginning and end to the induction stroke, the fit of the valve in its pocket being such as to give a slide valve effect until the one is clear of or enters the other. The ultimate result, it is claimed, is higher efficiency with quieter valve operation than usual.

Ricardo slipper pistons of aluminum are used, with three compression rings, the piston pin floating in the unbushed bosses and in the bushed small-end of the connecting-rod.

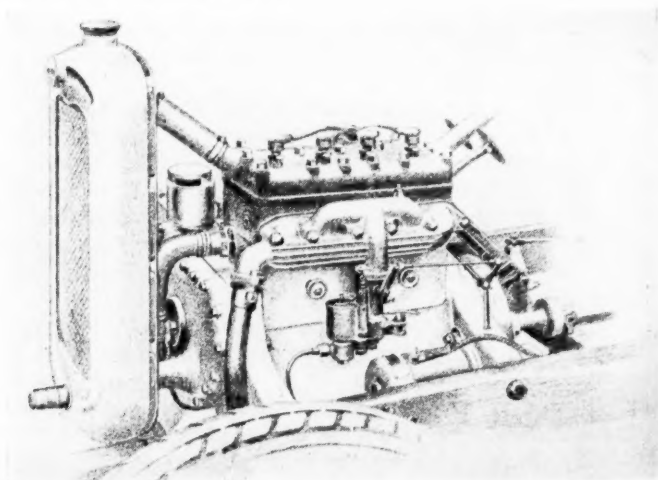
Crankcase a One-Piece Casting

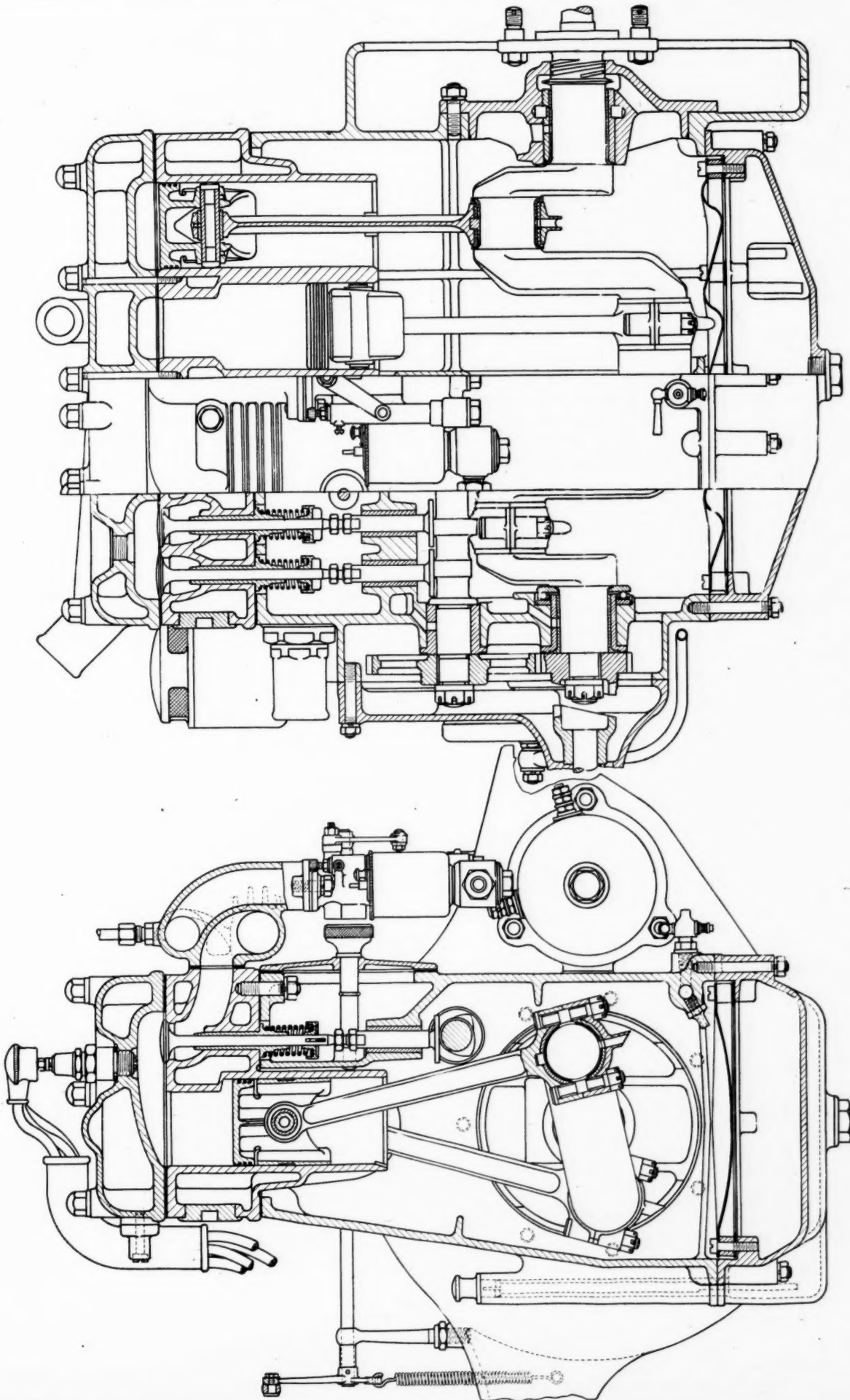
The crankcase is a one-piece casting in aluminum with four bearer arms and flywheel housing integral. The two-bearing crankshaft is threaded-in from the rear, as usual with this type, the rear-end bearing being supported by a flange plate which is made in two parts by reason of the use of a flange fixing for the flywheel. The sump, a ribbed aluminum casting, has an indented top plate secured by screws, the four indentations forming oil troughs with slots alongside to allow excess oil to pass down to the sump.

As will be gathered from the last sentence, a circulating splash lubrication system is used, and herein Ricardo has departed from normal practice in the design, operation and location of the pump. The latter is of the oscillating plunger type driven from an eccentric front extension of the intermediate wheel of the distribution gearing. The plunger reciprocates within a disc having a flat surface at its "outer" end and this in oscillating successively opens and closes the suction and delivery ports. The pump casing is housed within a recess in the front of the distribution gear case and its cover plate carries unions for the suction and delivery pipes, which are exterior to the crankcase and sump.

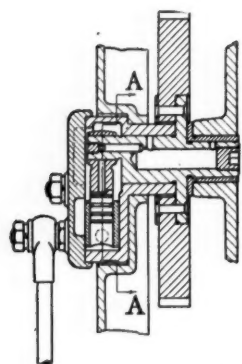


10-20 hp. Triumph light car with standard body
and general view of Triumph-Ricardo engine





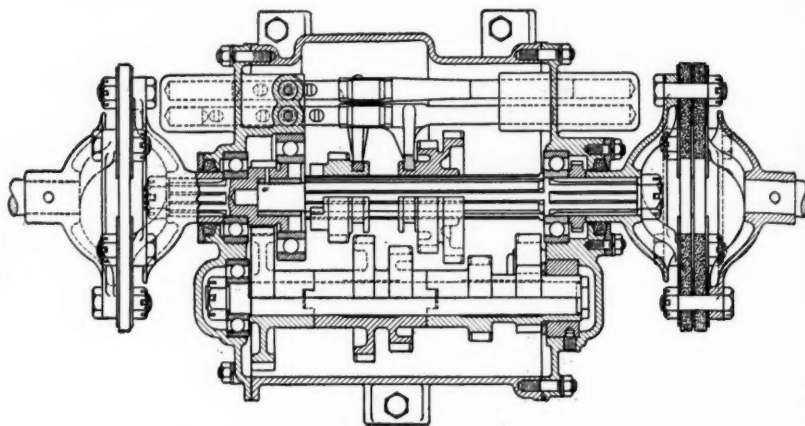
Longitudinal and cross sections of Triumph-Ricardo 10-20 hp. engine



Oscillating type of oil pump



SECTION A-A



Triumph four-speed gearset. Note intermediate bearing on primary shaft

For this type of pump freedom from wear, a high lift and an efficient discharge are claimed; in addition, there is said to be no need for priming even with an air-locked suction pipe. This pump is on the lines of that used in the Ricardo-design tank engines, of which large numbers were constructed during the war.

The distribution gearing is all of the straight-toothed pattern. There are five pinions in all, the drive from the one on the crankshaft being conveyed to the camshaft, magneto and generator shaft pinions by an intermediate wheel formed of Fabroil, this wheel having a pitch circle of $6\frac{1}{2}$ in. and a tooth width of $11/16$ in.

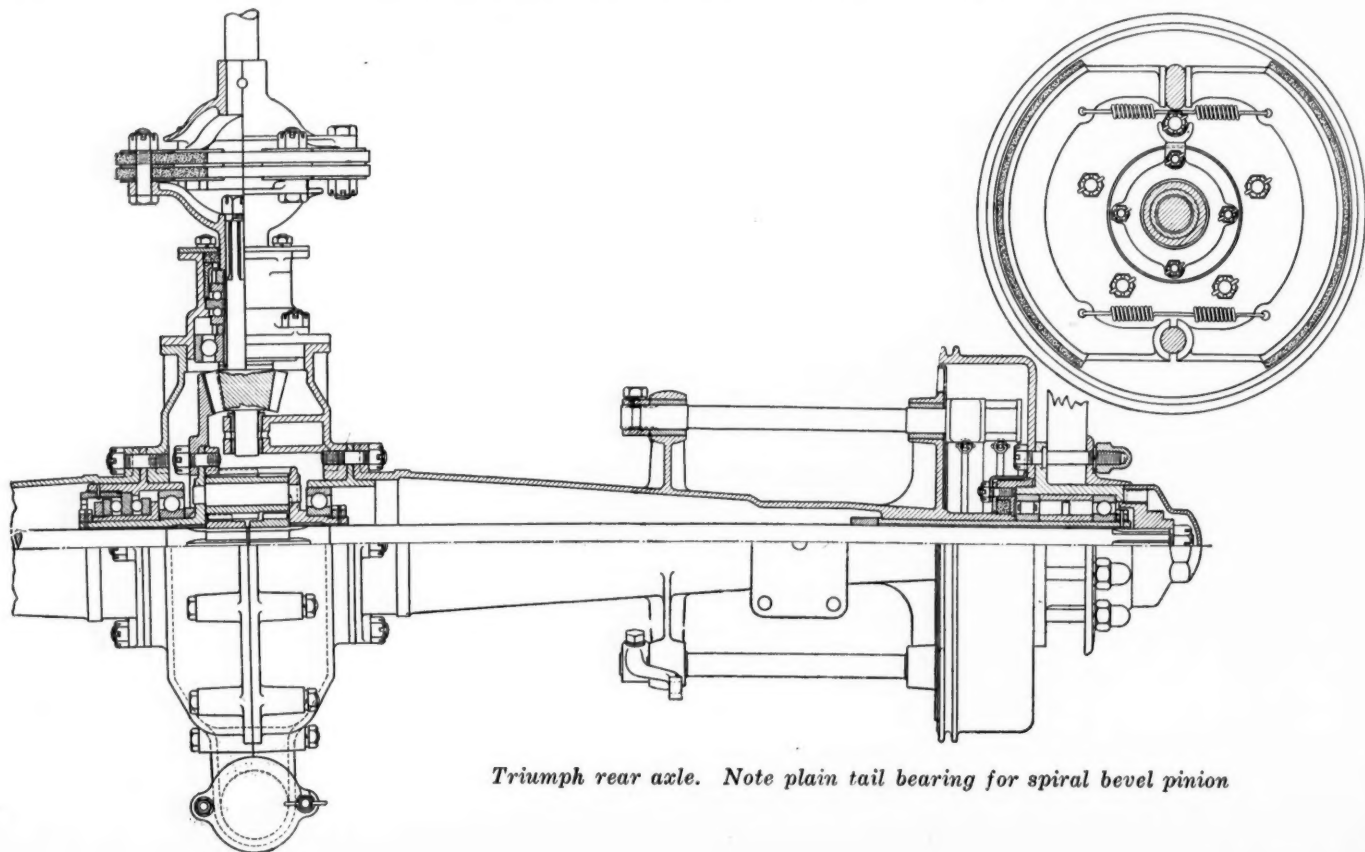
The inlet and exhaust manifolds are integral, the unit being secured by studs and nuts to the cylinder block, with the exhaust outlet at the front end. Thermo-syphon water circulation is depended upon and it is to be noted that, contrary to what is generally accepted as correct practice, the center of the radiator is approximately level with the center of the water jackets, thus giving the cool water as far to rise as the hot water issuing from cylinder

head to the top of the radiator.

Apart from the features mentioned there is nothing unorthodox in the engine, while the remaining components are also normal in general design though differing here and there in detail. The four-speed gearset, for example, has an additional ball bearing immediately behind the primary constant-mesh pinion on the mainshaft, the inner race of this being mounted on the pinion extension forming the driving member of the high gear dog clutch.

Engine and gearset are separately mounted, the latter on a sub-frame with a disk joint at each end of the coupling shaft. Hotchkiss drive, spiral bevel back axle gears, ball-bearing axle and semi elliptic springs with gaiters as a standard accessory are other items of the specification.

The engine is termed 10-20 hp. and has a bore and stroke of $2\frac{1}{2} \times 4\frac{3}{8}$ in. (86 cu. in.). With a two-passenger body and double dickey, $28 \times 3\frac{1}{2}$ in. cord tires, a wheelbase of 8 ft. 6 in. and track of 3 ft. 10 in., the car sells at £420, which is above the standard price of even British cars of this type.



Triumph rear axle. Note plain tail bearing for spiral bevel pinion

Need for Standardization of Traffic Laws Grows Imperative

Possibility of legislation in this direction told at meeting of National Highway Traffic Association. Railroad men urge public education on grade crossing dangers. Recommendations offered to reduce truck overloading. Former officers reelected.

By Philip H. Smith

Need for standardized traffic legislation throughout the country is imperative, due to the enormous growth of interstate travel. The confusion arising from lack of uniformity in the use of colored signal lights is in itself a very serious traffic menace. National legislation may be anticipated if improvement does not come about. This was reiterated by almost all the speakers at the annual meeting of the National Traffic Association held in New York last week.

Other subjects of import which came up for discussion were the prevention of truck overloading, highway financing from the standpoint of sound business and grade crossing traffic legislation. The latter was discussed by the railroad interests as well as the automotive.

Reports were also submitted on the subjects of rural motor express lines and clearing houses for motor transport, and the future of transportation in its largest aspect was touched upon by several speakers.

In this connection, Prof. Louis W. McIntyre, University of Pittsburgh, as chairman of the National Committee on Mechanical Devices for Highway Traffic Regulation, recommended the following practices:

The use of position lights in place of colored lights as traffic signals. This would help to decrease the number of accidents due to color blindness.

Stanchions should not be connected with chains.

Signals should be stationary and strong.

Devices must be simple and infallible.

One-way streets should be better indicated by arrows painted on pavement.

Separate lanes for slow and fast moving traffic.

Location for signaling devices should be carefully studied.

Flashing beacons be used only to indicate first degree danger.

Traffic center lines be painted on streets.

McIntyre's report was received with approval by all parties. Representatives of the railroads were unanimous in urging that red be reserved to indicate danger. The railroads are standardizing on a swinging red light for crossings and in general are using red to indicate danger and stop, yellow for caution and green for proceed.

Cooperation Will Bring Standard Practice

H. Eltinge Breed, consulting highway engineer, New York City, as chairman of the National Committee on Status of the Construction of Highway Curves and Recommended Practice to Increase Safety to Traffic, stated that standardized practice was merely a matter of getting highway officials to come to an agreement and that it must be brought about promptly.

The use of traffic center lines on highways is becoming

more and more popular in the United States. Frank T. Sheets, Illinois State Superintendent of Highways, maintains that this practice increases the safety of the highways from 25 to 50 per cent, and his conclusion was drawn only after long observation. The report of the committee of which he is chairman said in part:

One of the embarrassing defects encountered in concrete pavement slabs having a width greater than 16 ft. is the formation of unsightly longitudinal cracks brought about by the combined stresses produced by nature and traffic.

Construction to Eliminate Cracking

To eliminate such cracks the center of the pavement must be thickened to a dimension not justified by economy. However, this may be circumvented by introducing a longitudinal center construction joint dividing the normal two-crack country pavement having a width of 18 ft. into two 9 ft. sections.

Slabs 9 ft. in width have never caused any difficulty so far as longitudinal cracking is concerned. By proper interlocking and tying together of these two 9 ft. strips, the interior portion of the pavement may be made practically as strong as an unbroken slab.

The combined center line construction joint and painted traffic center line are being used in the State of Illinois on all pavements built on the 4800 mile State trunk line highway system which is being pushed to completion at the rate of 1000 miles per year.

A report outlining a system of danger or warning signs carefully considered by a number of Mid-Western highway engineers was read by the chairman of the Committee on Highway Danger Signs, G. C. Dillman, Deputy State Highway Commissioner of Michigan. One of the recommendations was that signs should be of four different and distinct shapes, indicating the nature of the danger.

This recommendation drew forth much argument. It was felt that varying shapes were impracticable and that the nature of the danger should be graphically depicted as far as possible on the sign to enable the motorist to grasp the situation in the least possible time.

Equitable distribution of cost of construction, interest on bonds, replacement and maintenance of highways was discussed by William H. Connell, Assistant State Highway Commissioner of Pennsylvania. Connell prefaced his remarks with the statement that no method of financing road construction will suit all situations. He did lay down this plank, that:

1. Initial construction should be a capital charge and in general should be provided through bond issues.
2. Maintenance should be an operating charge and provided for through current revenue.

There is no set way to raise current revenue, but the State of Pennsylvania believes in deriving it from motorists, as they are the greatest beneficiaries. Connell said that it had been estimated that the yearly maintenance cost for Pennsylvania roads aggregated \$9,000,000, but that the correct estimate was nearer \$25,000,000. The difference, he explained, was due to an incorrect conception of what constituted maintenance. For example, replacement of highway wire cable guard rails would require \$750,000 a year for several years and this should be considered as a maintenance charge. Grading and drainage are the only permanent constructions and the permanency of these depends on future development in highway requirements.

Highway Financing in Chaotic State

Financing through bond issues Connell said was permissible where interest and sinking fund would be cheaper than upkeep where such upkeep charges exceeded the economic limit. The term life of a bond issue should be the same as the length of the road life in every case and never exceed it. When replacing present highways for the future the difference in cost required for betterment should not be put into bonds but come out of current revenue.

Highway financing is today in a chaotic state, Connell said. A broader point of view is necessary. Users must pay the entire highway maintenance cost and if this is realized, Connell maintains, it will prevent legislatures from increasing motor vehicle taxes to raise funds for other purposes.

In January, 1923, the Motor Truck Division of the National Automobile Chamber of Commerce, in cooperation with the Society of Automotive Engineers and at the request of the motor vehicle administrators, adopted a revised "Standard Caution Plate for Motor Trucks." The Committee on Regulation of Overloading of Motor Trucks in its report at the meeting showed this new caution plate and urged its general adoption.

The committee reported in part:

We believe that the use of this new plate will discourage under-rating and that it will prevent over-selling. Its use is not compulsory. We urge further:

1. The restriction of loads per inch width of tire, per wheel and per axle.
2. Recognition of the type, condition and factor of resiliency of tire equipment, taken at the time vehicle is weighed, for use in regulating speeds and the determination of license fees according to wheel load.
3. The restriction of the minimum thickness of solid and cushion tires when measured between the tire flange and a flat metal surface on which the wheel stands.
4. The recognition of the tractor and semi-trailer as separate units so that we may encourage the distribution of the very heavy loads over more than four wheels.
5. Rigid enforcement of the provisions of the Proposed Uniform Motor Vehicle Law and existing State laws.
6. Active cooperation in every movement to regulate properly loads and speeds of motor trucks on the highway.

Would Prohibit Weaving Trailers

Motor trucks using pneumatic tires should be specially designed for such equipment and if braking apparatus is improved they should be permitted to operate at higher speeds than trucks equipped with solid tires, otherwise different rates of speed are unwarranted. This is the suggestion presented in the report of the Committee on Regulation Covering Speeds, Weights and Dimensions of Motor Trucks and Trailers by the chairman, George H. Pride, president, Heavy Haulage Co. of New York.

The recommendation presented in a former report rela-

tive to the prohibition of trailers which weave when in motion was reiterated.

Some discussion arose relative to the first statement. It was thought that pneumatic tires had a less wearing action on road surface than solid tires. Pride maintained that this had not been proven as yet and that the committee would not make definite recommendations until the results of experiments had been carried to a final conclusion.

The demand for national transportation and the function of streets and highways was ably outlined by J. Rowland Bibbins, consulting engineer of Washington, D. C., and chairman of the Committee on Development of Transportation. Bibbins' report was boiled down so that it contained much meat for transportation engineers, men engaged in city planning and automotive leaders. He said in part:

The time is ripe for concerted action based upon reasonable interpretation of facts before rather than after broad national policies are enunciated.

How fast we are moving is evidenced by the fact that the Transportation Act, 1920, our bible, does not definitely visualize to the slightest extent the function of highways and highway transport in our future system. Nor does it recognize that the function of transportation begins with the origin of shipment and ends at the final destination of a consignment, including land, rail, water, terminal, collection and delivery movement. Station to station movement by rail is only one part of the operation and represents, perhaps, only one half of the total cost to the consuming public.

Even the Agricultural Inquiry of 1921, while revealing an immense body of new data regarding the inefficiencies of distribution, did not give an adequate picture of the need of correlating the various transportation functions, specially highways and waterways. Perhaps the broader view was too new and too big to permit of any other treatment at the time.

Correct Transportation Inefficiency

The important thing now is to recognize where transportation inefficiency exists and move toward its correction. Otherwise, the problem of keeping up with our tremendous transportation demand will become increasingly burdensome.

It rests with the various national organizations and technical bodies to develop practical ways and means for perfecting facilities and operations at the various points in the transportation journey where this increased efficiency would insure the greatest improvement in transit with the least drain on the capital resources of the country.

The enormous number of railroad crossing accidents occurring yearly brings the railroads into the position of being actively interested in regulation and legislation pertaining to grade crossings and they were well represented at the meeting.

H. A. Rowe, claims attorney, Delaware, Lackawanna & Western Railroad Co., announced that the American Railways Association had determined to press the campaign for accident prevention with even greater vigor this year. There are three ways to grapple with the problem of reducing accidents at grade crossings, he said, they are: By engineering, education and by legal process. The first includes the elimination of grade crossings, but this he explained is not immediately, due to the length of time required to make the changes and the enormous cost.

Rowe stated that the immediate remedy lies in educating the motorist to exercise the highest degree of care in operation on the highways. The campaign carried on in this direction has yielded excellent results and indicates the feasibility of carrying it even further. He said:

"We wage no war upon the automobile (most of us are interested as owners). On the contrary, we are exerting ourselves to free it from the stigma of a slaughtering agency when operated by the criminally reckless or heedless.

"There is an excellent opportunity before all public authorities charged with the construction, maintenance and control of traffic on highways and those interested in the operation of vehicles over our highways to cooperate practically and sincerely in the laudable effort to check the increase of railroad-highway crossing accidents, and there will be abundant gratification for all in the saving of human suffering and no one will be the loser by his cooperation."

The following resolution was read and adopted by the Association:

The National Highway Traffic Association places itself on record as approving the efforts of the American Railway Association to encourage travelers upon the highway, particularly those using automobiles, to exercise a high degree of care at railroad-highway intersections, and this body urges upon its membership wholehearted personal cooperation in discouraging reckless disregard of danger at such crossings.

Rural motor express lines will undoubtedly expand greatly this year after a two year period of quiescence caused by the agricultural and industrial depression. Before this development of motor lines may be operated at maximum efficiency and with maximum safety to those undertaking it there is need of much wider and more definite knowledge of the cost of doing business. It is to the interest of those who wish to see this development to cooperate with the operators of such lines as far as possible. This is the sum and substance of the report of the National Committee on Rural Motor Express pre-

sented by the chairman, J. H. Collins, manager research department, The Chilton Co.

The recommendations presented in the report follow:

The Rural Motor Express Committee of the National Highway Traffic Association can function best through the establishment of cooperative relations with the various leading factors now interested in the development of rural motor express.

Such cooperation might well be along the following lines:

1. Cooperation with truck manufacturers in making analyses of hauling costs, and in the selection of the best types of equipment for motor express lines.
2. Cooperation with successful operators of rural motor express lines to the end that the systems and methods of these operators may be available for the common good.
3. Cooperation with railroad committees in the study of ways and means whereby rural motor express lines can be made more effective feeders to establish railroads.
4. Cooperation with farmer's organizations in the development of community hauling systems.

There is great need for highway transport clearing houses as a factor to aid in the development of highway transport. The development of this form of transportation is not keeping pace with the demand, nor is there a sufficiency of data relative to costs of operation. There is need to bring together the scattered forces, shipper, transport operator and the like and the means to do it must be brought about through cooperation.

This in brief covers the report made on the clearing house situation. The association was urged to confer with the Interstate Commerce Commission on the early development of interstate motor transport regulations, especially in the adoption of such regulations as will be applicable in unifying individual State regulations.

Women Contribute Heavily to Automotive Patents

STUDY of 5000 patents granted to women during the last ten years conducted by the Women's Bureau, Department of Labor, shows that women have contributed heavily to the inventions of automotive equipment. The number of inventions concerned with motor traffic constituting almost one-half of the transportation patents granted to women, together with the wide scope of inventive activity indicated by the list, serves to reflect clearly the increasing share taken by women in the operation of motor cars.

Correspondence conducted by the Women's Bureau with the various inventors gives evidence that this actual driving and care of cars, furnishing as it does greater opportunity for observing the conditions of efficient and deficient operation of the mechanism, is an important influence in swelling the total of women's inventive achievements.

A search through the formal descriptions of these inventions reveals a high degree of technical knowledge and a comprehension of the unsolved problems of air travel. Small numerically as is the entire list of aircraft inventions, it nevertheless affords substantial argument for larger opportunities and freer access for women to facilities of research and experiment.

Research by this Government agency shows that women have obtained patents under the classification "Automobile Bodies and Parts," some of which follow: Bed automobile; body, convertible; brake for trucks; brake control, arm operated; brake emergency; brake lever; brake shoe, self-adjusting; bumper; carburetor; clutch mechanism, and many others.

Under the heading "Automobile Tires and Tire Attachments," the following inventions are credited to the genius of women: Antiskidding attachment; antiskid stud; armor for tire; combined tire and rim, etc.

Women's contributions to "Automobile Accessories" include articles to prevent accumulation of moisture on glass; automatic detector for identifying vehicles; carrying receptacle for automobiles; child-holding attachment; combination tail and automobile license light, and others too numerous to mention.

After a thorough study the Women's Bureau reached the conclusion that "Women inventors, even more than men, are in need of facilities for marketing or promoting their patented creations, because women are generally more restricted in funds and less informed concerning the methods of profitable patent disposal.

"In view of the handicaps under which women inventors have always labored, the rate of increase in the number of inventions patented by women and the range and quality of their inventive achievements furnish an argument for expanding women's opportunities for research and experiment and securing to women easier access to facilities essential in patent procedure.

"The Patent Office records, on the whole, furnish a reasonable guaranty that with a reduction in the excessive discouragements due to frequent failures to realize money quickly on patents, with an expansion of opportunities for research, and with easier access to the facilities essential to patent procedure, the nation will be rewarded by the increased measure of inventive service from women of creative abilities."

Study of Material and Methods Needed in Non-Metallic Gear Production

Quiet gear-driven front end obtained. Tests with a typical product indicate blanks are more expensive than metallic type. Fewer tear-downs and easier inspection offset extra cost. Analysis of manufacturing processes improves results.

By J. Edward Schipper

A QUIETER front end drive at little or no increase in cost as compared with metallic gears can be obtained by the use of certain non-metallic materials, provided proper precautions are taken in the processes of manufacture. Blanks for non-metallic gears are more expensive than those for metallic, but the difference in the cost of the blanks is offset by a reduction in the number of rejections for noisy operation, and, consequently, of the tear-down and rebuilding operations. However, the material can be used to best advantage only if the manufacturer first acquires an intimate knowledge of its properties and of the best methods of handling it.

Where gear drive is used for the front end, the problem of silent operation will probably first be attacked by the manufacturer from the standpoint of improving his metallic gears. In analyzing his problem, he will invariably find that the difficulties are, first, the high cost of obtaining extreme accuracy in gear manufacture, and, second, the resonance of the material itself.

The expense of machining metallic gears to extreme accuracy logically leads to a study of non-metallic materials, with which quietness can be secured without going to the extreme in low tolerance limits. Recently there has been considerable discussion of the possibilities of grinding front end gears to obtain accuracy. Owing to the limitations of gear grinding machines up to this time, this, of course, would involve a return to the spur type of gear, a rather drastic step. Developments along this line would be of great interest.

The Formica Insulation Co., manufacturer of non-metallic gear blanks, has made an interesting study of

just what can be accomplished with non-metallic material. This concern has more than 200,000 engine timing gears now in service. It maintains that the fundamental requirement made of gear material is that not only must it be able to withstand the stress set up by normal loads, but also to take care of overload and shock stresses.

Metal gears fulfill this requirement, but it is difficult

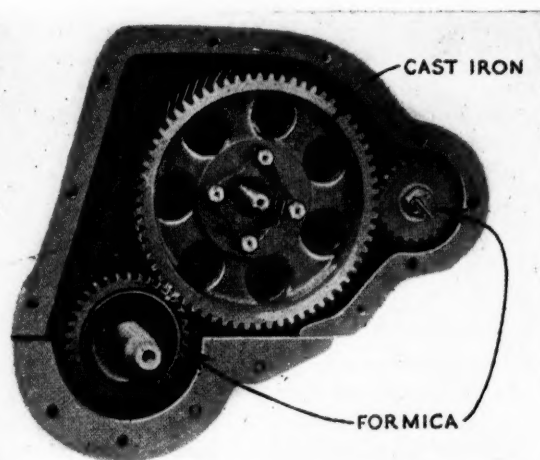


Fig. 4—A three-gear train with cast iron camshaft gear and Formica crankshaft and generator gears used on engine for Lexington cars

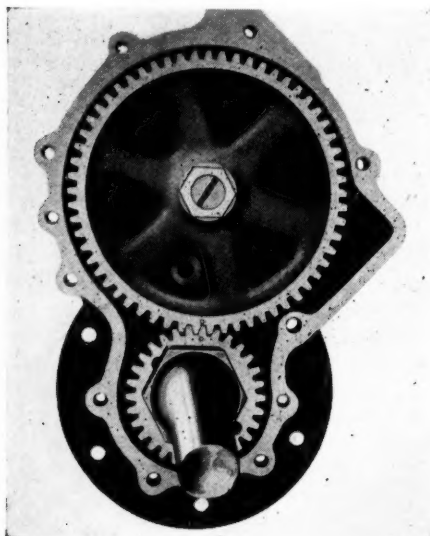


Fig. 1—Two-gear train on the Maxwell motor using a Formica pinion on the crankshaft against a metal camshaft gear

to keep them uniformly quiet, because slight inaccuracies are likely to occur in their manufacture. The metal is not elastic enough to compensate for these inaccuracies when the gear is in operation, and the "ring" of metal striking metal at high speeds forms an undesirable noise. Variations in the clearance between gears caused by whip of a shaft at high speed and by a slight change of centers due to heat expansion accentuate this action.

Non-metallic material should have the required strength, should be oil and heat resisting, and, in addition, be more elastic and non-resonant. For the same degree of inaccuracy, the non-metallic gear would be quieter, because the vibrations set up by the tooth hammer due to the inaccuracy of the gear form would be of less amplitude.

It must be conceded that some of the early non-metallic material promised much in experimental work but fell down in service. There has been a great deal of development since that time, with the result that it is now possible to secure products having the required uniformity and endurance.

As the material is non-resonant and is adequate in strength, the entire matter centers about the knowledge

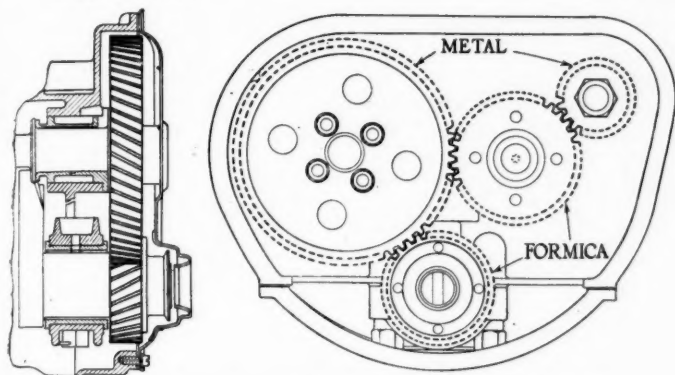


Fig. 2—Four-gear train for front end drive on Reo engine, employing Formica gears for the crankshaft and idler gears, and metal gears for the camshaft and generator drive gears

of how to manufacture the gears. One manufacturer who has used non-metallic material for years gives the following rules for the production of the gears:

"Take all precautions you would take in cutting a good set of metallic timing gears. Spend plenty of time studying the substance of your non-metallic gear blanks. Learn by experiment its behavior on the gear cutting machine as well as when installed in the timing gear train."

This manufacturer states that attempts to solve the non-metallic gear cutting problem will fail if the utmost pains are not taken. Without a knowledge of the physical characteristics of the blanks, there will be spells of noisy gears and no solution except the very inefficient and costly one of changing timing gears on almost finished engines.

As the opinion of this manufacturer seems to agree with that of most others who have offered their views on this important subject, a further exposition of the points made by him will be of interest. It is necessary to have good machines, in perfect alignment, true running arbors, etc., on which to cut or hob the gears. He advises the cutting of one gear at a time rather than the "ganging" of blanks on an arbor. It is necessary to keep the hobs sharp.

In cutting non-metallic gears, the blanks must be backed up so as to avoid breaking out teeth. As far as speeds and feeds are concerned, most of the non-metallic materials can be handled like brass. Some materials are cut dry, Formica being one of these.

Another manufacturer who has found that non-metallic gears are entirely satisfactory as far as wearing qualities and silence are concerned, states that lapping compound of any kind should not be used in running in the cast iron gear with a master gear. The abrasive in the lapping compound imbeds itself in the gear and very shortly cuts away the teeth of the non-metallic gear. This manufacturer further states that he suspects that this practice has contributed to any lack of success with non-metallic gears.

Tolerances for Formica Gears

It is, however, a fact that Formica gears, as used in the front end drive on this particular car in both four- and six-cylinder types, have proved satisfactory to the manufacturer. This concern fits the gears with approximately the same backlash as used with metal gears. The timing train on this car has only two gears, the generator and fan assembly being driven from a pulley mounted on the crankshaft extension. The water pump is mounted and driven at the forward end of the camshaft. No inertia forces of any magnitude are imposed on this front end drive.

Most of the manufacturers using gears of Formica or a similar compound have found that more liberal toler-

ances for backlash are possible. The shaft centers, however, must be held quite close. One concern cuts the Formica gears to have about 0.003 in. backlash. If the tooth form and helix are held within narrow limits, the results have proved very satisfactory. If not accurate, the gears wear out rapidly, and nearly every case of undue deterioration has been chargeable to improper tooth form or error in the angle of the teeth.

In manufacturing timing gears from non-metallic substances, it is necessary to check the finished product very closely while setting up the tools, as the material has a slight tendency to spring away from the cutter in machining. The Maxwell Motor Corp. has found that the same limits can be held as on metallic gears. When this is done a quiet front end is possible with negligible selection in assembly.

One of the points which is discussed probably more than any other in connection with the use of non-metallic materials for front end drives, is whether the large camshaft gear or the smaller crankshaft and generator gears should be made of composition. For a long time it was believed that the camshaft gear should be non-metallic, but manufacturers of non-metallic gear materials now have become convinced that it is better to make the two smaller gears non-metallic. The reason advanced for this is that the teeth of the crankshaft and generator gears wear only at the point of meshing with the camshaft gear, whereas the camshaft gear wears at two points, where the crankshaft gear meshes with the camshaft gear and where the generator gear meshes with the camshaft gear. Furthermore, there is an uneven wearing action upon the camshaft gear. At one point it is being driven by the crankshaft gear and at another it is driving the generator gear. Hence, the fact that the camshaft gear has twice the number of teeth is more than offset by the double and uneven wear explained above.

Uniformity in Manufacture Stressed

In some cases the composition camshaft gear is at a disadvantage for several reasons. It is quite apparent, for instance, that the strength factors with this type of material decrease very rapidly with increased diameter. Consequently, the smaller gears are far stronger than the larger camshaft gears would be. Furthermore, the cost of the gear blank rises rapidly with increased diameter and, taking account of these various factors, it will be seen that a more durable and lower priced installation

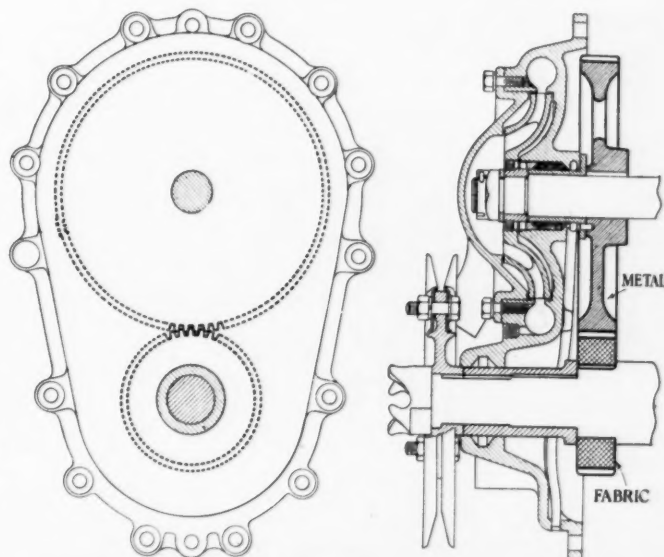


Fig. 3—Typical fabric gear drive as used on the Oldsmobile

results if the two smaller gears are made of non-metallic material, rather than the larger camshaft gear.

The development of Formica material has progressed over a number of years, and the method of manufacture is of interest. The big problem is to secure not only the necessary physical properties, but also a high degree of uniformity. Formica is manufactured from a specially woven cotton duck and Redmanol resin, the latter being the anhydrous product of the Bakelite Corp. A feature of the duck employed is that it possesses the same strength in the warp and in the weave, with the result that the finished material has the same tensile strength both with and across the grain.

The cotton duck, in the form of a continuous web, is subjected to an impregnation process comprising two steps and which is claimed to insure the complete impregnation of every fiber of cotton with the resin. After impregnation, the treated duck is passed through a steam-heated oven, the speed of passage, circulation of air and temperature being automatically controlled. The passage through this steam-heated oven starts the reaction in the phenol resin, and drives off all volatile materials, includ-

ing whatever moisture there may be in the duck itself.

After this treatment, the duck is cut into sheets of the proper size, the individual laminations are built up to the desired thickness and subjected to the final curing process in steam heated hydraulic presses, where a pressure of nearly one ton per square inch is applied. The material is cured at a temperature of about 175 deg. C. The time of curing varies with the thickness of the sheets being manufactured.

The final curing completes the reaction in the phenolic resin and renders the product practically infusible and insoluble in water, oil or any of the ordinary solvents. The material is removed from the presses in the form of sheets, and from these sheets the blanks are cut, either by hand sawing or circular cutters. The material is then subjected to critical inspection with regard to hardness, insolubility, tensile strength, moisture absorption, etc.

The final product has a tensile strength of about 10,000 lb. per sq. in., a modulus of elasticity of 320,000 lb. per sq. in., a Brinell hardness of 34, a specific gravity of 1.38, and a coefficient of linear expansion of 0.00002 per deg. Fahr.

Thermostatic Control Features New Hess Carbureter

A NEW carbureter with a single floating nozzle and with only one adjustment is now in production by the Hess Carbureter Co. The carbureter has a single air inlet and the air passage is so designed as to keep the air at high velocity, regardless of engine speed. Metering of the gasoline and air is accomplished by the rise and fall of the floating nozzle and air valve arrangement and, in addition, compensation for temperature conditions is effected by a thermostat which governs the relation of the fuel aperture to the metering pin.

Gasoline flows from the float chamber, A, through a passage which communicates with the nozzle. In the center of the nozzle passage is located the metering pin B, which is in a fixed, upright position. The passage which surrounds the tapered part of the metering pin is contained within a rising and falling assembly which combines the functions of a fuel nozzle, comminuting or atomizing device and air regulator. The fuel flows out of the orifice D, into a space C between two disks which

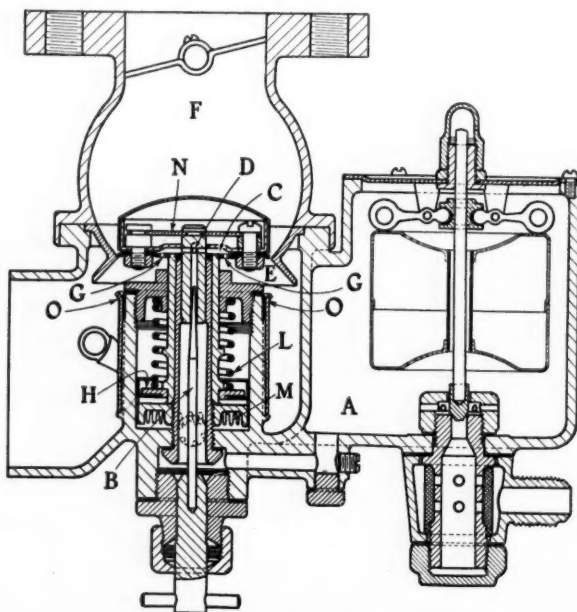
form a sort of slot in the rising and falling air valve. This is designed to spread the fuel in a thin film around the valve head where it comes in contact with the air stream flowing through the initial air gap E. The fuel is said to be volatilized as it passes through the globe shaped mixing chamber F before entering the manifold. A series of air orifices G, admit to the fuel slot small streams of air which assist in atomizing the liquid before it is discharged into the principal air stream.

The metering pin is shaped to proportion properly the supply of gasoline which issues through the floating nozzle to the fuel slot as the nozzle is carried upward with the valve head by the engine suction. The valve head is attached to a piston unit H, and the rise of the valve is counteracted by a light coil spring L, mounted between the piston unit and the spring retainer.

The piston unit assembly rests on the upper surface of the calibrating gear M, when the engine is idling or at rest. The calibrating gear is set and locked in position to provide a proper initial air gap at E. The floating nozzle is mounted in the fork of a thermostatic suspension beam N. In warm weather, or after the carbureter becomes heated, this thermostatic beam bends downward, reducing the size of the opening between metering pin and orifice.

For easy starting, there is a sleeve choker O, surrounding the central cylinder in which the piston operates. The sleeve choker is actuated by a dash control through a rocker shaft which lifts the sleeve so that the flared upper edges come against the throat ring just below the initial air gap. This closes the air gap and provides a very rich mixture for starting.

In operation, the Hess carbureter is said to deliver a thin film of gasoline over an extensive area to the air stream at the point of highest velocity. It is claimed that this method results in a rapid volatilization of the fuel at low temperatures, thus rendering unnecessary heat devices which would tend to decrease the volumetric efficiency of the engine. The construction of the carbureter is such that but one adjustment is required and this is for the location of the metering pin, which, after being set, remains fixed. A screen or strainer of cylindrical form surrounding the supply stud is provided to prevent any foreign substance entering the float chamber.



Sectional view of Hess carbureter

Truck Marketing School Develops Better Retail Salesmen

Selling conferences provide an intimate knowledge of product, factory policies and merchandising methods. Distributors and dealers are thoroughly sold on idea as worked out by Federal Company. Each course lasts for ten days. Expenses are shared.

MERCHANDISING effort is the basis of a stable sales curve. Current business conditions affect markets temporarily, but the organization with properly marshalled selling forces is always relatively strong. Successful truck manufacturers have made steady progress by recognizing this fact.

It became apparent some time ago that special effort would be necessary to develop enough good salesmen to dispose of the trucks that manufacturers are capable of producing. Various educational methods are used for this purpose, the most comprehensive of which is the sales school. Such schools have not been common in the truck industry, although several have been conducted in the past.

An excellent example of how a successful truck sales school functions is given by the work now being carried on by the Federal Motor Truck Co. This particular school, started three years ago, was based on an analysis made by the company, which indicated that the retail salesmen needed more than anything else a proper education about the product they were selling.

The course is designed to give the salesmen complete information about the manufacturing company, the construction and operation of the vehicle, and a thorough knowledge of the best way to present the truck to prospective buyers. Emphasis is placed on the fact that truck salesmanship is more a matter of selling economical transportation than of marketing the vehicle itself.

The faculty consists of executives of the Federal Motor Truck Co. and of companies which make units for the Federal truck. Each course begins with a talk by M. L. Pulcher, general manager of Federal, who outlines the history of the company, discusses its various policies, and tells what the future holds for the successful truck salesman.

Production Methods Discussed

Production methods and facilities are discussed by H. J. Warner, vice-president in charge of production. He gives the salesmen some idea of the investment the company has in tools, equipment, and factory space. A general talk on motor truck selling follows. In this address F. L. Pierce, sales manager, gives some observations about "truck salesmen he has met."

Thus far the material presented is largely inspirational in character. It is designed as a general basis upon which to build a more specific knowledge of the detailed problems involved in truck marketing.

Chassis and engine parts are discussed thoroughly in the mechanical parts of the curriculum. A chassis is built up in the classroom, so that the sales students may see exactly what is the function of each part and how the

various pieces are fitted together. Each unit is discussed by a man who is thoroughly familiar with it. The chief engineer of Continental Motor Corp., for example, tears down a Continental engine, builds it up again, and explains to the men the reason for every feature embodied in the design.

Reasons are given by Federal engineers for each of the various models which comprise the Federal line. Sixteen different models are built, each of which has some definite reason for being. The salesmen have to be familiar with the purpose of each type.

Demonstration sales are used to bring out specific points and there is always free discussion of items which arouse special interest.

Distributors Send Qualified Men

Announcement of a school or conference is made two weeks before it is to open. Distributors are asked to send any man whom they believe to have qualifications for becoming a successful truck salesman. The man chosen may be old or new in the distributor's organization.

Expenses of operating the school fall largely on the factory. Actual traveling expenses, hotel charges, and cost of meals, however, are divided into three equal parts. The factory, the distributor, and the salesman each bear one-third of the burden. It is believed that the salesman works harder and gets more out of the course when he has some financial interest in it.

A man is allowed his actual railroad fare from his home town to the factory and return. He is allowed \$2.50 a day for a hotel room and \$3 a day for meals. Two meals each day are eaten at the factory cafeteria, a practice which reduces food costs considerably.

When they get to the factory the salesmen are informed that they are in for ten days of stiff work. They attend lectures from 8 a. m. until 5 p. m., and are obliged to write examination papers on the day's lessons afterward.

Originally the school started with only eighteen members, but a much larger number attended the last session which was held early in 1923. One man came from Vancouver, B. C., and another from Portland, Me.

Turnover among dealer salesmen has been reduced materially since the installation of these sales conferences. Eighty per cent of the members of the Federal Star Club, an organization comprised of the best salesmen, were graduates of sales schools. Distributors and dealers throughout the country have been thoroughly sold on the idea of sales schools, another one of which will be held this fall. The promotion and operation of the school is in charge of Advertising Manager R. H. Crooker.

Dial Gage Device Used with Success to Test Spiral Bevel Gears

Machine developed to determine inaccuracy of tooth outline and errors of indexing recently adapted to check correctness of curvature. Brings to light fact that products of same machine and hob differ widely. Effects of burnishing shown.

By P. M. Heldt

THERE are two kinds of errors in toothed gearing which are apt to cause noisy operation, viz., inaccuracy of tooth outline and errors of indexing. At the Production meeting of the S. A. E. held in Detroit last fall K. L. Herrmann of the Studebaker Corp. presented a paper describing a new gear testing device developed by the concern with which he is connected. At the recent meeting of the American Gear Manufacturers Association in Cleveland Herrmann gave the results of some further work along this line and showed numerous curves obtained from tests of gears made from different materials and in various stages of production.

By the Herrmann method a curve of the outline of a tooth known to be practically a perfect involute is first traced on paper on an enlarged scale and a curve of the tooth outline of the gear under test is then traced over the model curve, so that the variations from the ideal or desired form are directly apparent. In addition to errors in tooth profile, errors in indexing are shown by the same apparatus, and these are also plotted in the form of curves, excess spacings being shown as positive and deficient spacings as negative.

In modern gear manufacture one of the greatest causes of errors is the carburizing and hardening of the gears. It is well known that the quenching process has a tendency to contract the gears, and this is strikingly illustrated by Fig. 1, which shows a tooth profile of a green gear tooth, and, superimposed thereon, another profile of the same tooth after the gear had been heated and quenched ten times in succession. The effect of the quenchings is evidently cumulative.

Herrmann showed individual profile curves for each

stage of the process, from which it could be seen that the carburizing effected a slight distortion and that the profile errors increased after each hardening. On the other hand, the spacing or indexing errors increased at first and then decreased again, so that the maximum error after the tenth hardening was not very much greater than that in the green gear and no greater than that in the carburized gear, but the spacing errors changed abruptly from tooth to tooth and not gradually as in the green and carburized gears.

As regards accuracy in green cut gears, it was found that gears produced with a rotary cutter showed only very slight variations from the master curve, in spite of the fact that this method of gear cutting is not very highly thought of at the present time and is being discarded in shops where high production is aimed at.

One interesting thing brought out by the use of the testing device is that the gears produced in the same machine with the same hob vary quite considerably from time to time. Thus a certain set of curves showed that a tooth produced with a given hob on a given machine at 11 a. m. on Jan. 14, 1922, was inside the master curve at the top by about 0.002 in., while a tooth produced on the same machine and with the same hob at 11 a. m. on Jan. 17, 1922, three days later, was outside the master curve at the top by more than 0.003 in. This might be ascribed to wear of the hob were it not for the fact that the changes in the tooth form with progress of time varied most irregularly.

The effect of burnishing the teeth of gears was also shown (Fig. 2). In the chart the solid line shows the profile of the gear tooth in the original state, the dashed

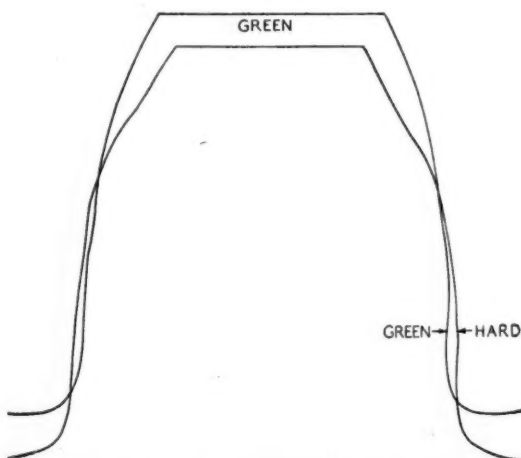


Fig. 1—Relative forms and positions of gear teeth in the unhardened state and after ten hardenings

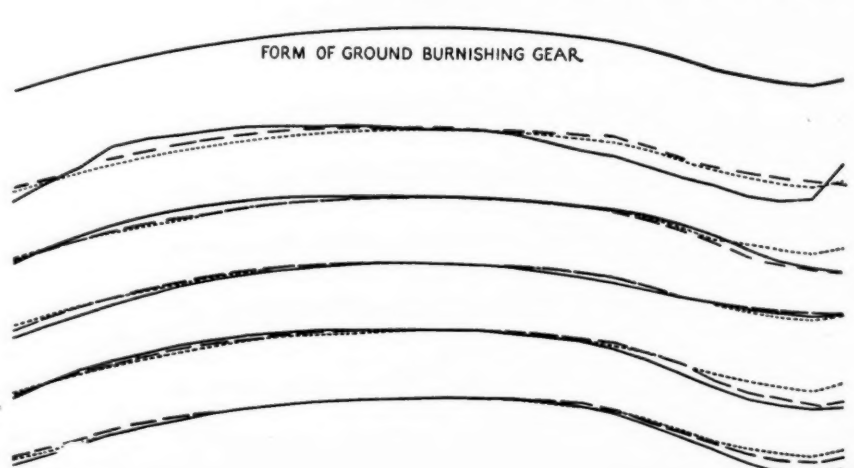


Fig. 2—Tooth profile curves of burnished gears

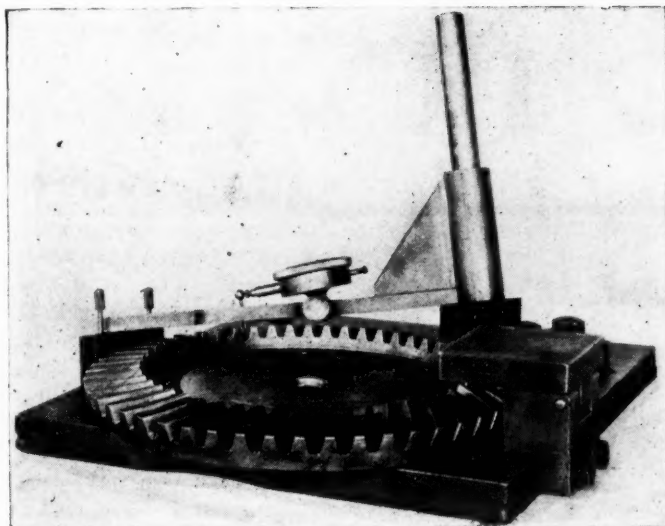
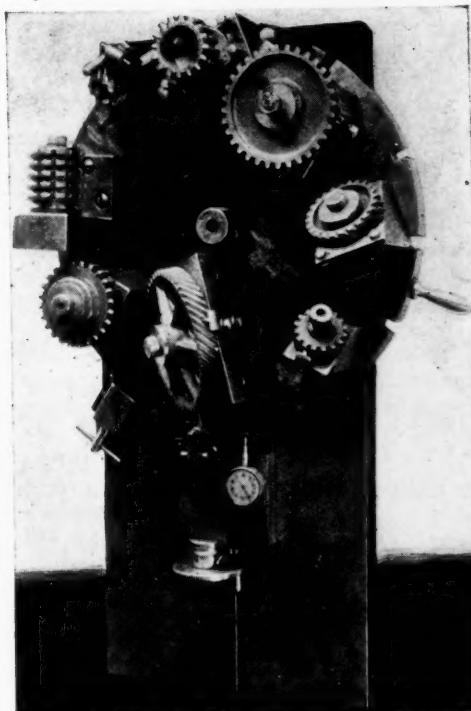


Fig. 3 (above)—Device for testing circularity of spiral bevel gear teeth

Fig. 4 (right) — Fixture used for determining spacing errors in various forms of gear



line the tooth form after burnishing and the dotted line tooth form of the burnishing gear.

With ground gears, ground by one or the other of the modern methods, there is hardly any perceptible variation from the tooth outline of the master gear.

In recent years when spiral bevel gears were noisy the usual explanation was that the curved teeth had straightened out in hardening. Until recently there was apparently no instrument for checking the correctness of the tooth curvature in a hardened gear, but Herrmann has adapted his testing device to make it suitable for this purpose. As indicated in Fig. 3, the device consists of a base plate on which the gear under test is

mounted so it can be swung around a central stud. A swinging arm carries the dial gage in such a position that the distance from the axis of the arm to the point of the feeler is equal to the radius of the cutter used in producing the gear. The end of the arm can be swung between stops arranged at such a distance apart that the feeler of the gage can cover the whole length of the tooth.

If the gage is properly set, a perfect tooth gives a zero reading in any position of the swinging arm, whereas if there are imperfections the gage will give either plus or minus readings, and a curve can then be drawn showing the errors in the tooth curve.

Views on Industrial Relations Presented in "Pulling Together"

THE views about industrial relations of an enlightened, progressive manufacturer are presented in simple fashion by John T. Broderick in his little volume entitled "Pulling Together." The need for a free discussion and consideration of mutual problems by employers and employees, and the conducting of such discussion in a spirit of honesty and fairness is the basic conception of the book.

The manufacturer whose views are given points to such frank intercourse as the only means of attaining industrial efficiency and, hence, the best way to get the largest returns. He brands as antiquated and inefficient those big business men who have failed to grasp this new conception of human relations in industry.

Nothing specially new is presented, but the ideas are thoroughly sound. The story is told in brief, simple fashion, which will enable the general message to reach some who would not care to go through a more thorough analysis.

"Pulling Together" is presented as a Pullman car smoking room conversation between "a machine tool salesman with a philosophic turn of mind," and a multi-millionaire manufacturer who goes nameless. The author

plays the rôle of listener while the train goes from New York to Albany. The rather obvious character of many of the questions asked by the salesman fail to reveal much of the "philosophic turn of mind" which is claimed for him, while the dialogue which connects the various dissertations of the manufacturer is a bit naïve. Robson & Adee are the publishers.

AN elementary work on the automobile which has met with a good deal of success in France is H. De Grafignys Catechisme de l'Automobile, published by Gauthier-Villars & Cie. of Paris, of which a fourth edition has just been brought out.

The subject matter is handled in the form of questions and answers, but the questions are short and the answers relatively long, so that the relation of question to answer is much the same as that of the heading to the paragraph under it in other books.

The work seems to contain all the information the automobile driver needs and is written in such style that the layman can understand it. It is, of course, printed in French.



The FORUM



Prime Cause of Pumping Not Film Pressure

Contends that difference in pressure between crankcase and cylinder is chief factor. No need to flood cylinder with oil

Editor, AUTOMOTIVE INDUSTRIES:

A. Ludlow Clayden's letter, in the April 5 edition of AUTOMOTIVE INDUSTRIES, answering mine printed in the Oct. 12, 1922, issue, is very interesting. As to my missing "all the essentials" I wonder what he means? Does he realize the number of factors contributing to oil pumping, and that oil film pressure is only one, and one of the easiest to overcome? Would he expect all of the factors involved to be covered in a Forum letter? I did not attempt to last October, so will not do so now, for I have not the time nor the inclination to enter upon a thorough exposition of the problem, so will simply cover the factor that Clayden mentions, and show why I claim the difference between crankcase and cylinder pressure as being the true cause of oil pumping. Oil suction would be a better term.

If we take a cylinder open at both ends and well oiled, and in this place a piston, which has the usual rings and grooves, the rings quite loose though, both at the gap and inside clearance, but having no skirt, we will find on reciprocating the piston that the oil is pushed impartially to both ends of the cylinder; the rings merely acting as scrapers. Now if we take a skirted piston, the same as the previous one in respect to rings, grooves and general dimensions other than the skirt, and repeat the former procedure we will find that the oil is passed to the end of the cylinder that is opposite to the skirt, the transfer is slow but positive. The force causing this transfer is due to the quantity of oil trapped between the skirt and cylinder wall, which being backed up by the lower ring, when the piston is drawn back, flows under the ring, back of it and through the gap toward the point of least resistance, in accordance with known laws. Hence the bigger the gap and the looser the ring in the groove, the greater the flow. This is oil film pressure.

Separate Head and Skirt Relieves Pressure

By using pistons that have the head and skirt separated by a considerable gap, as in the hour glass (E. C. Long, and a number of other types) this force is entirely eliminated. Thus, if oil film pressure is the true cause of oil pumping, we would have to reach the conclusion that by using pistons of the above mentioned types, it would be utterly impossible for an engine to pump oil. That conclusion is ridiculously absurd on the face of it. Engines fitted with such pistons often pump oil. That brings us squarely up to the fact that if engines so fitted pump oil, then oil film pressure is not the cause of oil pumping, but that another force is responsible for it. Let us see what that is.

If we take the cylinder, now, and close one end so as

to create a vacuum when the piston is withdrawn and go through the same procedure as before, using the skirtless piston and providing plenty of oil, we will find that the oil is drawn through the rings and into the closed end of the cylinder. We know that this same piston when the cylinder was open did not favor either end of the cylinder, therefore the impelling force now must be the vacuum in the cylinder and nothing else. Hence my assertion; oil will be forced toward the point of depression, in proportion to quantity of oil supplied, the size of the passage through the rings, and the degree of cylinder depression. If we use the skirted piston we will find that the flow is slightly accelerated. Thus we show that vacuum does have something to do with oil pumping and not only something, but that it is the true cause of oil pumping.

Eliminating Vacuum

The effect of the piston skirt can be eliminated by proper design; that of vacuum only by eliminating our present vaporizing system. Even then, whenever the crankcase pressure exceeds the cylinder pressure, whether due to blowby or heated air in the crankcase, pumping will occur. To eliminate vacuum the trend of design must lean toward the constant compression engine; all other factors can be taken care of, in our present engines, by proper design.

Another thing, Clayden uses as the approximate atmospheric pressure, 15 lb., whereas, the pressure under the piston, due to its churning, is somewhat higher and increases with the piston speed.

It is folly to place too much faith in oil holes, slots and oil scraping rings. Careful experiments have shown them to be useful only when the rings are tight and the cylinder true; under those conditions the piston does not need their assistance. There are good, scientific reasons why this should be so. The holes and slots are only half way measures to relieve oil film pressure, they do not prevent pumping. The real cure for pumping is to watch the oil supply system when laying out the design.

This brings me up to the letter of M. Olley of Rolls Royce of America, Inc., who apparently favors flooding a cylinder with oil. The primary reason for oiling any piece of machinery is to cushion and separate wearing surfaces from each other, thus avoiding friction and smoothing their action. A film of oil one thousandth of an inch thick, between contiguous parts, providing they are properly finished, is as good as a flood of oil. As to keeping a piston cool, a well-designed piston does not require a flood of oil to cool it. The churning of the piston gives the designer a better opportunity to provide

for its cooling, than the designer of an air-cooled cylinder ever has, without the need of endangering the trouble free life of the engine, by flooding it with oil. Freedom from trouble, after all is said, is what makes or breaks the reputation of a car, and the designer has no right to risk that reputation by taking unnecessary chances. Every detail of engine lubrication can be calculated in advance without risk of either over, or under oiling any part, and there is, therefore, no necessity for a modern engine to pump oil, if unnecessary chances are not taken. Our present splash feed and full force feed systems are little better than hit or miss methods; they serve the purpose but are the cause of no end of trouble. The high pressure, intermediate, force feed system, is to my way of thinking the ideal, with it oil can be delivered positively to any point, at any given period and in any quantity required.

ARTHUR LA FOUNTAIN.

Large Tire Gives Better Traction

Editor, AUTOMOTIVE INDUSTRIES:

In reference to the letter of Ethelbert Favary in AUTOMOTIVE INDUSTRIES of May 3 commenting upon my statement about driving more safely without chains with the 7-in. tires than with chains on the 5-in., specifically mentioned the past extremely icy winter.

Ice-covered streets are always full of large and small ruts, the small, hard tires easily slide from the ridge of the icy rut to the bottom. With front wheels in one set of ruts and rear in another, nasty slews result.

The large low air pressure tires yield locally to the ridge of a rut, in fact, the car can be steered for long distances on that ridge, consequently it can be driven straight down an ice-covered, badly rutted street, where the course of a small-tired vehicle would be drunken.

Secondly, in some cases the small-tired vehicle cannot get out of ruts, and is helpless to avoid collision with other vehicles in the same ruts. The large-tired vehicle can get out of such ruts and dodge traffic.

Third, the large lower unit pressure tires upon a smooth pavement upon a sudden application of brakes very perceptibly squat and so work in perfect harmony to Favary's theory. To squat, the load must be increased on those tires—the load is increased, consequently the total pressure; the area of contact is increased and a condition obtained where instead of a 1000-lb. load and 6 sq. in. of contact, we have a 1500-lb. load and 9 sq. in. of contact under the same unit pressure as the 6 sq. in. contact—this certainly gives better adhesion.

Notwithstanding this one example in harmony with Favary's theory, there are so many other examples to prove that increased area does increase traction that I am afraid his theory simply isn't so. Take the particular car I am driving with whose tricks I am so familiar. Mount the 5-in. tire on rear wheels, put the front wheels against a good, strong fence, engage first-speed gears, give her three-quarter open throttle, let in the clutch, get out and sit on a stump and smoke your pipe while you watch the rear wheels revolve, burn up rubber and dig themselves in until the axle housing is supporting the car.

Try this same stunt with the 7-in. tires with wide-open, racing engine and all you get is a few spasmodic revolutions of wheels and a stalled engine.

If increased contact area does not increase traction why the caterpillar

tractor? Why the booster trucks on freight locomotives in the West where a pair of steam cylinders can at will change the normally rolling front wheels into drivers and give ten drivers instead of eight?

In both these instances we have a vehicle of a constant weight made able to move by increasing its contact area with no increase of total pressure.

Why has the statement of all the tire companies that the giant pneumatic tire on a truck gave better traction (which it does) than any combination of solid tire on the same truck, never been challenged? The pneumatic tire simply has in that case more contact with the road, total pressure is the same.

As regards side sway, the amount of side sway is governed by the force; the springs are the liveliest things in the car, and with small tires get nearly all of it, with the large tire the springs simply get less and the tire more, total the same.

By the way, while reference is made to springs, all these tires have been driven with the old springs—if springs were used suitable to the action of the tire, more improvement would result.

The Detroit Pressed Steel Company has two identical Dodge commercial cars, both working twelve hours per day, one with 32 x 4-in. tires, the other 32 x 6-in. tires. All this past winter the 32 x 4 outfit was always in evidence fixing tires or chains—the 32 x 6 car never had a chain on it, and the only tire trouble was one puncture in six months.

A. L. PUTNAM,
Research Engineer,
Motor Wheel Corporation.

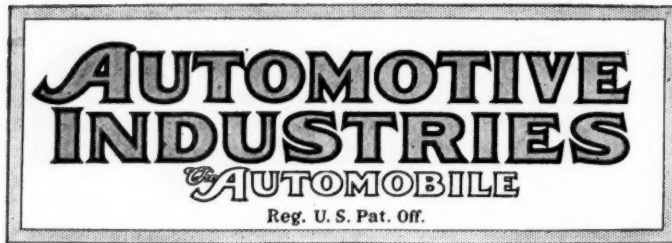
Markets New Pressure Lubricator

THE Allyn-Zerk Co. is marketing a pressure lubrication system operating on the pre-pressure principle, with a direct metal contact between nozzle and nipple instead of a flexible hose or a rigid connection. Each lubrication point is provided with a tapered nipple flat at the end, and drilled with a 1/16 in. hole to permit passage of the lubricant to the bearing. The end of the nozzle itself is cupped. Because of this construction the flattened end of the cone and the cupped end of the nozzle make a line contact which is said to be grease-tight when the parts are pressed together. The contact is claimed to remain grease-tight even though the nozzle and nipple are not in exact line, up to an angle of 30 deg.

Pressure is created in the barrel of the lubricator by turning the handle on the threaded plunger rod. This pressure flattens a curved steel spring, which puts pressure on the grease or oil, and it is claimed that the "emitting capacity" is the same whether the lubricator is full or empty. Pressure is held in the lubricator by a ball check in the nozzle seating against a steel, line contact seat. In using the Zerk lubricator pressure is built up by turning the handle, and then the nozzle is pressed firmly against the nipple. This pressure lifts the ball check in the nipple and permits the grease or oil to flow through the nipple opening into the bearing.



Showing method of using Zerk lubricator



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Relate Wages to Unit Costs

RECENT figures from the Bureau of Labor Statistics show that the average full-time weekly earnings of male workers in the automotive industry were \$33.19 in 1922. The report presents segregated wage figures for the various trades and for the sexes.

These statistics are interesting, but their real meaning can scarcely be found until they are correlated with production data. Wage figures in themselves mean very little. Manufacturers' profits depend upon low unit costs. Unit costs do not vary directly with wage levels.

Some economists would say that the actual wage figures should be considered only in connection with the cost of living. There is some justice in this viewpoint, as it is socially desirable, of course, to have wages sufficient to provide a reasonable standard of existence for the worker. But such a standard depends basically upon unit production costs. If man-

ufactured goods can be sold at low prices and still yield a high profit—a condition possible with low unit costs—a reasonable standard of living is possible.

The small value of actual wage figures when considered by themselves must be recognized. They can be interpreted properly only when studied in relation to the other important factors affecting production.

Weed Out Unfit Drivers

MORE rigid license requirements for motor vehicle drivers were advocated almost unanimously at the recent International Police Conference in New York. Men responsible for promoting safety in congested traffic seemed to feel they were not getting a full measure of cooperation from the authorities whose duty it is to determine who shall and who shall not drive.

No matter how efficient traffic patrolmen may be, the police officials contended, accidents cannot be prevented unless the licensing system is strict enough to weed out the mentally and physically unfit. The position was taken that no man or woman not physically fit, mentally sound and thoroughly trained as a driver should be permitted to drive a motor vehicle.

The automotive industry should take no exception to this stand. On the contrary, it should lend its support to the movement. The difficulty is that a person may possess all these qualifications and still be a reckless driver. No amount of examination can determine whether a driver lacks the consideration for others which makes him a menace on the road. Jail terms and forfeiture of licenses are the only punitive measures which will make him careful.

Rear Axle Efficiency

THE question is often asked, What is the efficiency of the worm gear or of the internal gear drive? That there can be no categorical answer to this question is obvious to those familiar with such matters. Considering only a particular design of any type of drive, the efficiency will vary with both the speed of operation and with the torque that is being transmitted. Furthermore the viscosity of the lubricant used is a factor of no mean importance. When different designs of the same type are considered still other factors enter into the problem, such as accuracy of tooth outline and spacing, accuracy of mounting of the gears, rigidity of the shafts and their mountings, quality of the bearings, etc. A figure might be quoted which represented the highest efficiency ever obtained with that particular form of drive, but this would be of little practical value, particularly if the conditions under which it was obtained varied materially from the average operating conditions in truck work.

At first consideration it seems rather disappointing that no definite conclusions are drawn from the results of the tests on rear axles made at the Bureau of Standards, recorded in a recent S. A. E. paper by S. Von Ammon. The above remarks should make it clear that this would have been difficult if not im-

possible to do. In fact, a definite pronouncement upon the efficiency of a whole class of rear axles is hardly justified upon the basis of tests on only one or two designs of the particular type. The paper, however, contains a mass of practical data which should serve as a reliable guide to the engineer or designer who is faced with the problem of making a choice of final drives for motor truck or similar purposes.

Even more difficult than obtaining a definite figure for the efficiencies of the different axle types is that of determining their useful life. In life, endurance or durability tests it is usual in order to save time, to subject the part under test to a load very much greater than its average load in regular service. Now, the overload capacity of any particular axle is partly a matter of design, that is, of relative dimensions, and only partly a matter of type. It is obvious that if in the endurance test the absolute load limit or breakdown load is closely approached, the axle may show a very short life, whereas in regular service under far different load conditions its life might be very satisfactory. It is fortunate that the author of the paper recognizes these conditions and cautions the reader against misinterpretation of the results of the endurance test.

Significance of Record Breaking Export

THE record-breaking automotive exports for March have a peculiar significance at this particular time. The figures announced last week, it will be recalled, showed that United States and Canada together exported about 20,000 cars and trucks in March, the largest number ever sent to foreign lands in a single month. This rise in foreign business is gratifying in view of a probable falling off in domestic production. While even an unusually large number of export sales cannot come near to compensating for any material decline in the domestic market, the volume of foreign business is large enough to yield a good profit and to aid in stabilizing the production curve. These facts were pointed out clearly in AUTOMOTIVE INDUSTRIES of April 26.

These March figures are specially favorable when it is realized that many of the countries which bought American vehicles in that month had already passed their summer selling season, some of them being well into winter. This indicates an excellent out-of-season business in South America, Australia, New Zealand and other countries in similar latitudes. Great Britain and Scandinavia, entering the spring selling season, doubtless took a good share of these cars and trucks. Still it is logical to believe that the southern countries absorbed more than 60 per cent, since detailed Canadian figures show that Australia took 2801 vehicles as against 1337 for Great Britain.

No immediate relation exists between domestic and foreign sales trends. The factors which indicate some reduction in domestic business will have no effect on the foreign markets which are absorbing American automotive products. The export sales curve and the current surveys of foreign buying conditions indicate a continuing increase in buying for

the next quarter. Past data prove that March has never been an exceptionally good month in the export field.

The 6 per cent of total sales comprised by exports, which does not include Ford foreign assemblies, can readily be increased by further merchandising effort. The results possible to obtain seem likely to be well worth the effort expended.

Putting Flat Rates in Operation

THE flat rate system has been installed in dealer establishments by many manufacturers and has been indorsed almost universally. Although it is only a few years old, it is already operating successfully in thousands of places. Its very youth, however, augurs some lack of smoothness in its operation.

Many detailed problems still remain to be solved. The ability of a given dealer to obtain mechanics capable of performing repair operations in the times designated is not the least of these difficulties. Time studies and instructions can be passed on to shops which are to do the actual work, but lack of skilled mechanics makes it difficult to carry out the plan in certain instances.

The unskilled or careless worker may do the job in the time given but fail to do it properly. Frequently he needs more detailed instructions. The factory may have to provide additional help.

To prepare films showing close-ups of maintenance operations would seem to be entirely feasible. Such pictures would give to a group of mechanics a very definite and specific idea of how the various jobs are to be performed and how quality can be combined with speed.

Need is apparent for some means of presenting repair methods more clearly to repairshop workers. If the one suggested is not feasible, some other will probably have to be devised.

All Dealers Should Advertise

REPORTS coming from the larger sales centers indicate that those dealers who are advertising in the local papers are getting a bigger share of the business than those who are not, regardless of the amount of national advertising done by the factories they represent.

If a dealer fails to cash in on his factory's advertising efforts by supplementing them with some of his own, he is falling down on an essential part of his business and will suffer just as he does from any other business mistake. Effective advertising unquestionably is an important part of modern day merchandising.

Factories which are losing sales because their retail representatives are letting their competitors do the advertising have a perfectly legitimate ground for complaint. Every dealer budget should contain an appropriation for advertising. Sales managers might find it profitable to check up their lists to determine who are the offenders and call them to account.

50,000 Citroen Cars Planned First Year

That Is, if American Arrangements Now Being Considered Go Through

PARIS, May 11 (by mail)—"The \$2,000,000 worth of American machinery I have ordered," said Andre Citroen, in an interview in his Paris office, immediately on his return from the United States, "will not only enable me to increase my output from 125 to 250 cars a day, but will make possible a reduction of 25 per cent on labor costs."

"As the result of my visit to the United States, I concluded that my factory was superior to the best in America, in machining, assembly and body work, but that it was inferior in foundry work, forgings, stampings, enamelling and conveyor systems. The machinery I have ordered and which will be erected under the supervision of the American engineers who came back with me, will wipe out this inferiority."

To Decide in Six Weeks

Citroen confirmed the report that he has under consideration the erection of an American factory. "When I return to America in six weeks' time, a decision will be taken," he said. "If it is decided to go ahead, I shall put on the American market my present type of Citroen automobile."

"These cars have been presented to the American public, and I know they will please. There is no need to make a special model for the American market. We have the advantage of lines, advanced technical experience and considerably lower operating costs. With gasoline costing 27 cents a gallon, the American public is prepared to consider the purchase of a car which costs less to run. With a Citroen we can guarantee to cut \$150 in average operating costs for one year compared with any other car of equal carrying capacity."

"If this scheme goes ahead, I shall lay plans for 80,000 cars and produce 50,000 the first year. We can sell this number right away. There is nothing difficult about the task. It represents 2 per cent of the total American output, whereas in France I am filling 45 per cent of the national output."

Criticizes American Publicity

"The American automobile industry does not know how to advertise," declared Citroen, and he indicated that if he invades the American market, he would show what could be done in this connection. "American publicity is feeble; it has no punch to it; it is lacking in point. I could show them something much better."

Continuing his interview, Citroen said:

Business in Brief

NEW YORK, May 17—Business progress has slowed down considerably from the rapid pace of March. It remains, however, at a remarkably high level. It is now thought in many quarters that the March peak will prove later to be the high point for the year. The peak of expansion has probably passed without a crisis due to the abundant credit facilities and the attention paid by business executives to the warnings of economists.

Perhaps the two most striking bits of evidence of the decline in business expansion are furnished by the reduction in unfilled steel orders and building construction. A large volume of projected building in New York City has been postponed and similar action is under way in other large cities.

The cold wave of weather which recently passed over the country has retarded retail buying and somewhat delayed agricultural developments. It is believed that the fruit crop has received injury but at the same time rains and snows have supplied much needed moisture.

Car loadings for the week ending April 28 set up a new record, aggregating 963,694 cars, which was an increase of 5,591 cars over the preceding week.

At the beginning of the week there were violent declines in the stock market bringing new low levels. Moderate gains were made the latter part of the week which in general tended to minimize earlier declines. Bonds were quiet but showed a distinct tendency toward higher prices.

There is no future in America for the Citroen-Kegresse system of flexible creeper track system of propulsion for at least another year. I took over with me the machines which crossed the Sahara desert, and the American public was not interested, for it saw no immediate practical application in such a device. If the American factory scheme goes through, I shall send twenty of these machines to the United States next winter and give demonstrations of their utility under snow and other strenuous conditions. America needs to be educated to the use of this type of machine.

Citroen is of the opinion that fears of a saturation point in America are foolish.

"The automobile industry in America is going to expand, and not merely for the next few years, but for a long number of years," he said. "In Europe, too,

(Continued on page 1103)

Stockholder Group Buys Zenith Plant

All Officers of Old Company Elected to Serve with New Zenith-Detroit Corp.

DETROIT, May 14—By unanimous vote of the stockholders all the property except cash and bonds of the Zenith Carburetor Co. has been sold for \$500,000 to the Zenith-Detroit Corp., composed of a group of minority stockholders of the former company. The new company has a capitalization of \$250,000 and has taken over the plant as a going concern, electing as its active officers the former officers of the Zenith Carburetor Co.

The old company will be liquidated and receives from this sale sufficient money to pay in full all its indebtedness and enough more to insure a liquidating dividend for its stockholders. The new company will have new and ample working capital furnished by the new stockholders, and all old stockholders will be given an opportunity to become subscribers to the capital stock of the new company.

Distinguished from Old Company

The change over in companies has been made to distinguish the new company from the old one, which has been involved in a patent suit with the Stromberg Motor Devices Co. since 1912. Stromberg in that year filed suit based on the Ahara patent, which it had purchased for \$500 and which expired in 1918. Accounting in progress over the past five years to determine payment due for infringement to 1918 will approximate \$400,000.

Further argument on the amount of the payment will be heard by the Master in Chancery up to June, and thereafter the matter will come up for review by the district judge and possibly the Court of Appeals. Zenith stockholders have contended throughout the suit that it was persecution rather than meritorious litigation. Manufacture of the Zenith carburetor has been free from all infringement since 1918.

Under the purchase price, Zenith Carburetor Co. will have enough to pay in full all current indebtedness and tax liabilities and will have enough to pay the \$400,000 award to Stromberg if confirmed.

N. A. C. C. Will Discuss Taxes at June Meeting

NEW YORK, May 15—The annual meeting of the National Automobile Chamber of Commerce will be held at New York headquarters, June 7.

A feature of the meeting will be a general discussion of gasoline taxes and the manufacturers will try to find out whether or not such taxes are desired by the industry.

Stockholders Ratify Frame Merger Plans

Formation of Midland Steel Products Completed with E. J. Kulas as Head

CLEVELAND, May 15—Final details of the merging of the Parish & Bingham Corp. and the Detroit Pressed Steel Co. and the operation of both plants under a single corporation known as the Midland Steel Products Co. were given out here by E. J. Kulas, president of the company, following ratification of the plan by the stockholders.

The general offices of the company will be in Cleveland at the plant of the Parish & Bingham Co. The Midland Steel Products Co. will be headed by E. J. Kulas as president, and the other officers will be: C. H. L. Flinterman, vice-president; Gordon W. Stoner, secretary, and R. H. Clarke, treasurer. The directors will be: F. H. Ginn, G. A. Coulton and E. J. Kulas, all of Cleveland; C. H. L. Flinterman and Frank Tillotson of Detroit and F. Ward Paine of Boston.

On Jan. 1 Kulas was elected president and general manager of Parish & Bingham, succeeding Mrs. Agnes D. Morse. He has been assisted in the reorganization of the company by Ralph H. Clarke, formerly of the Cuyahoga Stamping & Machine Co. and the Apex Electrical Manufacturing Co.

The Midland Steel Products Co. will have a capital stock of \$10,000,000 8 per cent participating preferred stock, 50,000 shares of no par common and a bond issue of \$2,500,000, which is a first mortgage sinking fund convertible 7 per cent gold bond issue.

The Parish & Bingham plant in Cleveland and the Detroit Pressed Steel in Detroit will be operated. The combined plants have 27 acres of land and 607,661 sq. ft. of floor space in buildings. Employees number in excess of 2000. The
(Continued on page 1106)

Trippensee and Everitt Companies Form Merger

DETROIT, May 16—The Trippensee Manufacturing Co., body builders, and the Everitt Bros. Co., automobile trimmers and top manufacturers, are to be merged in a new corporation, to be titled the Trippensee Closed Body Co., stockholders in the two companies having authorized the consolidation at meetings this week. All of the present plants of the two companies will be employed in the building of closed bodies for the industry generally.

The Trippensee company is well known in the industry and is at present supplying the Rickenbacker Motor Co. and

Commitments Indicate That Present Output Pace Will Continue Until July 15

By DAVID W. RODGER,
Secretary and Director of Sales of the Muzzy-Lyon Co.

Detroit, May 15.

THOUGH car and parts manufacturers are deep in the rush of manufacturing to meet sales demands of the second quarter of the year, and it is early to attempt to form conclusions of third quarter business, there are indications that the industry will continue to do a large volume of business as the year progresses.

It has come to be expected that there will be a slowing down in sales in the summer months and it is probably just as well that this should occur as it will offer opportunities for readjustments of various sorts which many companies desire to make and will have a generally healthful effect.

Commitments to the present time indicate that there will be little change in the present manufacturing pace until July 15, this coming within the scope of the second quarter business. Up to that time the industry generally will be in position where it cannot accept more business.

Inquiries by old line manufacturers on third quarter requirements indicate that they are expecting a strong volume of business, and while nothing definite can be concluded, it is evident that the feeling of the industry is generally optimistic and that a good fall business is looked for.

Though the automobile business still is on a seasonable basis, this is gradually giving way to the establishment of a sound all year buying. Cars are coming into use for all year driving more and more each year, and it is already a long step since the time when owners used their cars only in the fair weather months and jacked them up during the winter.

With cars constantly in use there is a broadening out in the sales period. Replacements of cars alone has a tendency to extend the business throughout the year and as more cars are placed in use there is a constantly widening replacement market.

The development of the closed car has been responsible in a large sense for the all year round employment of cars but a large measure of the credit is also due to the advancement in the art of manufacturing. Starting troubles as they existed in the early days of the industry have been eliminated for the most part and at one time difficulty in starting in cold weather kept many owners from using cars in winter.

Every movement that makes for placing the industry on an all year basis is highly important. With manufacturing spread out fairly equally throughout the year conditions would be much improved. Peak seasons cause many difficulties which are hard to overcome.

The rush of business throughout the early part of the year has not developed any evils such as occurred in the former heavy manufacturing period and going into the third quarter none of the companies will carry over stocks of any consequence.

several other concerns. When first formed in 1922 it had contractual relations with Fisher Body Co. The Everitt company was formed by B. F. Everitt and his two brothers, R. S. and G. D. Everitt. The withdrawal of B. F. Everitt as president was announced this week, his stock being taken over by his brothers. B. F. Everitt will devote his entire time to Rickenbacker.

Scandia, \$6,000,000 Company, Has Charter

DOVER, DEL., May 17—A charter has been filed by the Registrar & Transfer Co. for the Scandia Manufacturing Corp., to make automobiles, the capitalization being placed at \$6,000,000.

No information concerning the Scandia company could be had from the New York office of the Registrar & Transfer Co. There is, however, a Scandinavian concern, Aktieselskab-Scania-Vabis, located at Sodertelje, Sweden, which manufactures Scania cars and trucks.

No Upset Price Is Named for Liberty Sale June 14

DETROIT, May 16—The sale of the Liberty Motor Car Co., under an amended order of sale, has been set for June 14 at 12 noon at the plant, with no upset price stipulated. The terms of the sale with the exception of the withdrawal of the former upset price of \$1,175,000 are about the same as under the former order, according to the Security Trust Co., receiver.

The parcel will be offered as an entirety and in two parcels made up of the real estate as one and personal property the other.

WRIGHT ACQUIRES LAWRENCE

NEW YORK, May 17—The Wright Aeronautical Corp. has added to its line the Lawrence air-cooled engine through acquiring the assets and business of the Lawrence Aero Engine Corp. Charles L. Lawrence, who was at the head of the Lawrence company, will become a vice-president in the Wright company.

Industry Increases Its Supply Sources

In This Way It Has Been Able to
Quicken Deliveries Over
Past Years

DETROIT, May 11—Citing reasons for the improvement in material deliveries over previous rush years, as experienced by the industry this year, considerable stress is laid by executives upon the point that there is an increasing search for new supply sources, and that this year the industry spread its buying over far more sources than formerly had been customary.

This diversification of buying covers all classes of material required, from steel sheets to fabrics, and deliveries are now being made from many more sections of the country. Few of the large factories are now confining themselves to any one source for any given commodity. The sheet steel shortage was quickly remedied in this way.

There has only been one instance during the early year of a factory that was compelled to reduce operations because of a material shortage. All other plants have been operating at maximum and have been increasing their output month by month since the first of the year. This cannot be ascribed to preparedness, for few, if any, of the companies estimated the spring buying at anything like the quantity that it developed.

Avoid Labor Difficulties

Piling-up of commitments compelled speeding up of plants all along the line, but it also emphasized the point that the factories which had most supply sources to speed up got quicker results. This was especially true of factories which had spread their buying in several localities, thus avoiding to a considerable extent difficulties due to localized labor conditions.

Deliveries are now on a firm basis, and traffic managers are giving most of their attention to seeing that finished cars are shipped. Purchasing agents are getting estimates on third quarter business and some commitments have been made. These are reported to be for quantities comparing well with earlier months.

Shipments to Ireland May Pay Double Duty

WASHINGTON, May 15—Assistant Trade Commissioner Park has reported to the Department of Commerce that the Irish Free State has taken over the 33-1/3 per cent duty levied by England on imported motor cars and motorcycles.

This duty was imposed by England during the war and has since been continued as a protective measure. By its transference to Ireland, it becomes a 33-1/3 per cent duty against English manufacturers, whose interest it was original-

ly intended to protect. The duty became effective against English cars and cycles April 1, 1923, and will apply to any cars or cycles coming from England, regardless of origin.

American shippers are cautioned against including cars or parts intended for Ireland with shipments to England, particularly if they are to be unloaded in England for any reason prior to shipment to Ireland, as they may be liable to a double 33-1/3 per cent duty, once on entering England and again on entering Ireland.

Wanner Malleable Buys Stewart Iron Foundry

BELOIT, WIS., May 14—The Stewart-Warner Manufacturing Co., Chicago, has sold its big malleable iron foundry plant in South Beloit to the Wanner Malleable Castings Co., Hammond, Ind., which thereby increases its productive capacity to 130 tons a day, with 325,000 sq. ft. of floor space in the aggregate.

West Allis Foundry Sold

MILWAUKEE, May 14—The West Allis Foundry Co., West Allis, suburb of Milwaukee, has sold its plant and interests to Alfred M. Jones of Milwaukee, who retains the operating organization and will continue the production of gray iron, semi-steel and chilled iron castings. Jones is head of the A. M. Jones Co., manufacturing and dealing in foundry equipment and supplies, and for some time was sales manager of the Federal Malleable Co., West Allis.

Case Plow Foundry Leased

RACINE, WIS., May 14—Owing to the heavy demand for cylinder castings from the automotive industries, the Standard Foundry Co. has leased the large foundry of the J. I. Case Plow Works to save the time and expense involved in building additions to its own plant.

Iron Mountain Holdings of Ford to Be Improved

MILWAUKEE, May 14—Award of a contract for 4000 tons of structural steel to the Worden-Allen Co. reveals the fact that the Michigan Land, Lumber & Iron Co., owned by Henry Ford and son, will spend between \$2,000,000 and \$3,000,000 this year in enlarging the sawmill and body stock plants established at Iron Mountain, Mich., during the past two years.

The contract calls for a sawmill addition, an addition to the existing body stock and body works, a new body factory, a power house, a distillation plant, a carbonization building, and a general maintenance and machine shop building.

BUICK SALES LAST QUARTER

DETROIT, May 15—Buick Motor Car Co. reports sales for the first quarter as approximately 29,717 cars, or 156 per cent over the same quarter of 1922.

W. C. Durant Issues Reply to Wall Street

Cites Instances of Other Big Enterprises at Which Interests
Scoffed

NEW YORK, May 14—Wall Street's comments on the financial statement of Durant Motors, Inc., as expressed by the *Wall Street Journal*, B. C. Forbes and others, have produced a reply from W. C. Durant, who says "Wall Street has a habit of laughing, but this is true of the hyena. The difference is that the world doesn't take the hyena seriously."

The Durant financial statement stirred up the lower end of Manhattan Island and led to bursts of sarcasm, one critic declaring that "by the stroke of a pen" Durant had created \$23,488,000 in assets. Another spoke about "Durant blackboard surpluses" and commented on "finance that, praise God, is without Wall Street origin."

Whereupon Durant replied:

When Harriman sought financing for his transcontinental railway project, Wall Street laughed and said Harriman was a dreamer.

But Harriman got the money and the success of his project created the only real rival that J. P. Morgan & Co. had, in Kuhn, Loeb & Co.

When Westinghouse sought financing for his Air Brake, Wall Street laughed and said it was impractical.

But Westinghouse got the money and Westinghouse brakes have proved to be one of the greatest safety appliances ever produced.

When the great steel interests of the country were merged and the common stock of United States Steel was offered for sale, Wall Street laughed, saying there was enough water in the stock to float the entire Navy.

But United States Steel common today is backed by tangible assets 150 per cent greater than the farthest estimate of the underwriters' prospectus.

Street Laughed at Ford Venture

When W. C. Durant sought \$2,000,000 to consummate the purchase of the Ford Motor Co. for \$8,000,000 in 1908, Wall Street laughed and said the venture couldn't be profitable.

But the last Ford financial statement shows assets of over \$500,000,000 and a cash surplus of \$159,600,000.

When the automotive industry needed money in 1910, Wall Street laughed and caused the banks of the country to curtail all automobile credits, saying the saturation point had been reached with a production of 185,000 cars a year.

But American automobile plants are building close to 3,000,000 automobiles this year and 95 per cent of them will be marketed in one country alone that holds only 6 per cent of the world's people.

Wall Street has a habit of laughing, but this is true also of the hyena. The difference is that the world doesn't take the hyena seriously.

WILLIAMS HAS NEW TIRE

AKRON, May 14—A new type of tire with semi-flat tread has been introduced by the Williams Tire Co. of Akron.

Orders Assure Plant Capacity Past July 1

Wisconsin Car Factories Far Behind in Deliveries—Truck Makers Speed Up

MILWAUKEE, May 14—Despite the record-breaking limits to which manufacturers of passenger cars in this district have pushed their production, all factories are behind on orders, and if no fresh orders were received, capacity still would be required past July 1.

The pressure of orders is well demonstrated by the fact that the four-cylinder division of Nash Motors Co. in Milwaukee, which only recently completed extensive plant enlargement, let contracts during the past week for an additional one-story building, 130 x 247 ft.

This will be used for final checking-up service before shipment, or a "hospital," as such units are known in the industry. Its completion will release considerable floor space in the present machine and assembling shops for production.

Labor Limiting Supply

The motor truck industry is increasing production at a rate virtually limited only by the lack of labor supply. While yet below the peak reached during and immediately after the war, truck builders are very optimistic over future trade, and look upon the present extraordinary development of passenger bus lines as one of the most encouraging features they have to look forward to.

Building and highway construction also is absorbing many trucks, some standard but mostly special body types. Manufacturers of such bodies and mechanical hoists are busier than ever before in their entire experience.

Retail trade in passenger cars in the Milwaukee buying district during the first half of May will, it is confidently believed, show a comfortable excess over the corresponding period of 1922, which went into history as the best selling period ever known. With cars coming through from factories and distributors in greater quantities, dealers are catching up with orders, but only in respect to standard models.

TURNER TRUSTEE ELECTED

MILWAUKEE, May 14—Julius J. Goetz of Milwaukee has been elected trustee by the creditors of the bankrupt Turner Manufacturing Co., Port Washington, Wis., manufacturer of gas engines, tractors, etc. The concern has liabilities of \$236,550 and claims nominal assets of \$365,687.

MORE LOCKHEED BRAKES USED

DETROIT, May 11—The Hydraulic Brake Co., manufacturer of the Lockheed

hydraulic four-wheel brakes, reports the installation of more than 1000 sets on high priced automobiles during the past year. The company also reports that the City of Detroit has ordered installations on a number of its police department flyers following a year's test on one vehicle with complete satisfaction. The police cars are being equipped as an additional factor of safety for fast driving necessary at times in heavy traffic.

Ford in Western Canada Shows 100 Per Cent Gain

WINNIPEG, Man., May 16—One hundred per cent increase in business done in the three prairie provinces of Western Canada (Manitoba, Saskatchewan and Alberta) is reported by the Ford Motor Co. of Canada. Last year, during the first three months, 1189 cars were assembled in the Ford plant at Winnipeg for distribution in the prairie provinces. During the same period this year the total was 2360. The payroll for the three months in 1922 was \$45,359, as against \$65,941 for the first quarter of 1923.

Figures supplied by J. H. Irwin, branch sales manager for the Ford company in Winnipeg, show that Western Canada is coming back strong as a purchaser of automotive products.

"The plant is assembling this year an average of 40 cars a day, which is double the output of last year," Irwin stated. "We have imported in less than four months this year 9440 tires and tubes, making about 70 tons of freight on this item alone."

Moon Earned \$402,644 During First Quarter

ST. LOUIS, May 12—A profit and loss statement of the Moon Motor Car Co. for the three months ending March 31, 1923, prepared by Stewart McDonald, president, shows net earnings of \$402,644 in that period. The statement follows:

Net sales of passenger cars, parts and accessories, after deducting returns and allowances.....	\$2,774,109
Cost of automobiles, parts and accessories sold, after charging operating expenses, maintenance and depreciation (\$2,723) of physical properties, and selling and administrative expenses.....	2,417,851
Operating profit.....	\$356,256
Miscellaneous earnings:	
Discount on purchases, interest received, and other earnings...	46,388
Net earnings.....	\$402,644

CLEVELAND SHIPMENTS GROW

CLEVELAND, May 14—The Cleveland Automobile Co. reports that shipments in March, 1923, exceeded March, 1922, by 40 per cent, and that of April, 1923, was 50 per cent better than the preceding month. May is expected to exceed April by 50 per cent. Of the cars going through the factory now, 50 per cent are closed jobs.

Truck Makers Follow Conservative Policy

Make Commitments and Major Parts Releases on Practically Sales Basis

DETROIT, May 15—Truck manufacturers are following a very conservative manufacturing policy despite the great improvement in demand that has been noted since the first of the year. Commitments and releases on major parts are being made on what practically amounts to a sales basis, especially on supplies from factories in the manufacturing district. Some delay in getting parts is being experienced as a result of this policy, but buying will continue close for some time to come.

For the most part manufacturers believe the truck business will continue to improve gradually throughout the year, and much more confidence is being shown by truck dealers as the year progresses.

Price Increase Expected

General increases in the price of specialized unit trucks will be made in the next thirty to sixty days as result of price increases on unit parts. As fixed prices in this class of vehicle will represent increases which have been made in the cost of raw material, and as these are regarded as stabilized at about present points, so will the finished truck prices be stabilized for an indefinite period.

Used trucks in dealers' hands have been moving well with the upturn of demand. The service plan of Motor Truck Industries, Inc., of restoring used trucks held by dealers to good operating condition, has been found markedly successful in helping sales and will be a permanent feature of that organization's activities. The association reports the used truck situation as well in hand.

Segregation Move Grows

The movement away from combined sales of trucks and passenger cars is growing, the association reports, due in most part to the fact that specialized efforts are required in each field. Truck selling has passed beyond the point where the personal element was the primary factor in effecting the sale. The business now is fast approaching the point where ability to sell performance under given transportation requirements is the determining factor.

Parts makers are keeping a watchful eye on the truck industry and are co-operating in every way in restoring it to a strong condition. The service departments of the big unit makers are gradually developing special tools which will reduce costs of maintenance, and it is only a question of a short time when flat rates will be as important a factor in the truck field as in the passenger car field.

Hoover Names Drake Assistant Secretary

May Head Commodity Division
Because of His Superior
Qualifications

WASHINGTON, May 16—J. Walter Drake, chairman of the Foreign Trade Committee of the National Automobile Chamber of Commerce, chairman of the board of directors of the Hupp Motor Car Corp. and director of the Denby Motor Truck Co., has been appointed Assistant Secretary of Commerce by Secretary Hoover. Drake succeeds Claudius Huston, who resigned to become president of the World Commerce Corp. at a salary of \$100,000 a year.

Secretary Hoover has not announced the scope of Drake's work in the department, but it is believed that because of his many qualifications he will be placed in charge of the Commodity Division. His manufacturing experience, his knowledge of general business and his familiarity with exporting, as well as the fact that he is a lawyer by profession, are regarded as qualifying him for this important post.

It is Hoover's aim to develop the general business side of the Department of Commerce and make it such a fountain of information that big business men will not hesitate to come to the department for advice and consultation.

Drake Factor in Industry

Drake has been a most important factor in the automobile industry for years. His success with Hupp has been most marked, having brought the company into great prominence during his incumbency as president. About four years ago he became chairman of its board of directors, Charles D. Hastings assuming the presidency.

In the National Automobile Chamber of Commerce Drake has been a tower of strength, having been chairman of the Foreign Trade Committee since its inception in 1918. Always greatly interested in exporting, having sent a Hupmobile in a tour around the world as far back as 1912, he has made a close study of conditions abroad.

Drake and A. J. Brosseau represented the National Automobile Chamber of Commerce in the recent International Chamber of Commerce convention at Rome and returned from his European trip only a few weeks ago.

Appointment Came Unsolicited

DETROIT, May 16—The appointment of J. Walter Drake, chairman of the board of the Hupp Motor Car Corp., as assistant secretary of commerce does not mean that Drake will lose his iden-

GASOLINE TAX VETOED BY GOVERNOR OF IOWA

DES MOINES, IOWA, May 15—Unless a special session of the Iowa Legislature called to meet in December to revise the Iowa code overrules the Governor of the State by a two-thirds majority there will be no gasoline tax for the improvement of highways.

Such a bill was passed at the recent legislative session, but in the final days of the session Governor Kendall vetoed it.

In his veto the Governor declared that the tax "is a plain and palpable sales tax, assessed on liquids employed for the development of heat and power regardless of whether or not such liquids are used for the operation of motor vehicles."

tity with the automotive industries, although he will discontinue his active work. Beginning at once, he will make his home in Washington.

In accepting the position, Drake points out that the work as assistant to Secretary of Commerce Hoover is general in that it applies to all forms of industries in the United States.

Drake was very happy in the appointment, as it has come entirely unsolicited. As assistant to Secretary Hoover he will conform to the general policies of the department and will give the department a special experience resulting from his work in the development of the automotive industry in the past twenty years. His appointment is regarded as special recognition of the important place of the automobile in American industry.

Seek to Standardize Caps and Spark Plugs

NEW YORK, May 17—Six associations were represented at the meeting, held this week, of the Automotive Simplified Practice Committee, of which M. L. Heminway, general manager of the Motor and Accessory Manufacturers Association, is chairman. The meeting decided to make a survey on spark plugs and radiator and gasoline tank caps, it being brought out in the discussion that six of the leading low priced cars had different sized radiator caps, proving the need of standardization. The battery survey is making progress, but no report is ready. The next meeting will be held June 14.

Coker F. Clarkson, general manager of the Society of Automotive Engineers, has retired from the committee, naming instead W. P. Wall, chief engineer of the National Motor Car & Vehicle Corp. of Indianapolis, as the S. A. E. representative. Clarkson's place on the executive committee has been filled by the appointment of G. R. Lundane of the Automotive Equipment Association.

Service Heads Aim to Assist Dealers

Marked Interest in Problems
Shown at Convention Held
in Detroit

DETROIT, May 16—Dealer education was a subject of major interest at the factory service managers' convention of the National Automobile Chamber of Commerce, held here today and yesterday in the General Motors Building. The delegates showed a marked interest in the problems of the dealer, and everywhere there was evidence of a desire to help him find a solution for the difficulties he is encountering. The importance of the dealer and his service in the merchandising of automobiles was generally recognized.

The growing use of the piece work method of paying service station mechanics was an important development of the meeting. This method, of course, is used in conjunction with the flat rate.

Koether Opens Convention

The convention was opened with an address by B. G. Koether of the General Motors Advisory Staff. He painted a word picture of the assets and liabilities of the industry. He listed the universal desire to own a car as the industry's greatest asset, and the heavy accident rate as its greatest liability.

L. V. Pulsifer gave a portion of the paper on the subject of painting, which he has previously presented before the Society of Automotive Engineers.

How a large retail organization retains close personal relations with its customers was described by Richard Harfst, manager of the local Cadillac branch.

Newmark Makes Talk

The dealer was pictured as the foundation of all advertising and sales promotion work by J. H. Newmark of Durant Motors. The consensus of opinion on the subject of service advertising seemed to be that the time was not yet ripe for it.

An interesting discussion of methods of educating dealer service employees was opened with an address by T. W. Holloway of the Cadillac Motor Car Co., in which he described the service school operated by his company for the benefit of Cadillac service men. This course lasts two weeks and is intended to show the best methods of servicing Cadillac cars. R. A. Armstrong of the Oakland Motor Car Co. told of educational meetings his company is holding at distribution points for the purpose of educating the dealers' service men.

A committee was appointed to prepare a standardized owners' maintenance creed. This creed will tell the owner what he has to do to minimize maintenance expense and in its final form will be recommended for use in factory advertising.

**General Electric Co., Principal
Stockholder, Expected to
Offer Bid**

FEDDERS HAS STAR SECTION

radiators for Star cars will shortly be in operation at the plant of the Fedders Manufacturing Co. A continuous line production arrangement will permit a maximum output of 2000 complete radiators per day. This company will shortly move its offices into a new building to make the present space available for manufacturing purposes.

TOOL COMPANIES MERGE

**In Official Statement It Declares
It Does Not Control Fuel
Business**

Assuming an average retail price of 27 cents per gallon for gasoline in that period, less than one cent a gallon represents the profit of the company. On a typical sale of five gallons of gasoline at a filling station, involving the expenditure by an automobile owner, this company's profit is 4 8/10ths cents.

The executive committee of the Tire Manufacturers Division of the Rubber Association of America has formulated and recommended for adoption as standard by all manufacturers a new schedule of maximum load carrying capacities and minimum inflation pressures. In the table shown below the figures representing the maximum load and minimum inflation which are recommended to the car owner as safe practice are prefixed by an asterisk (*). Higher load and inflation figures are shown only for the guidance of users who may wish to disregard the recommended limits. The table follows:

[illegible]

Sale of 521,966 Cars Financed by G.M.C.

Aid Given by Acceptance Corporation in Four Years
Reached \$348,431,401

NEW YORK, May 15—Completing its fourth anniversary with the ending of the first quarter of 1923, the General Motors Acceptance Corp. has compiled figures showing that in the four years it has financed the buying of more than a half million automobiles, involving \$348,431,401.

The figures for the entire period show that in the nine months the corporation was operating in 1919, 25,635 cars were financed; 108,436 in 1920; 97,396 in 1921; 208,091 in 1922, and 82,408 in the first three months of this year.

General Motors dealers in supplementing their personal resources and their bank credits have called on the corporation for \$348,431,401, divided as follows: 1919 (nine months), \$17,624,795; 1920, \$83,401,256; 1921, \$72,531,387; 1922, \$125,048,589, and 1923 (three months), \$49,825,372.

These figures refer only to the financing of General Motors automobiles and do not take into consideration other General Motors products which are financed by the corporation.

Motor Wheel Acquires Another Mill in South

DETROIT, May 15 — The Motor Wheel Corp. has taken over a spoke and rim stock mill at Fordyce, Ark., as a feeder for the mills at Memphis, Tenn. This makes three large mills of this kind operated by the company in the South. The company also owns or controls several other plants handling rough stock for the larger mills.

The mill is situated in territory with fifty to one hundred million feet of hickory timber, with shipping facilities over the cotton belt route.

The company does not do its own logging, but locates its plants in territories where logging is being done. Most of the hardwood cutting is reported being done in cutover territory where pine and other soft woods have been taken out in the past.

Dodge Tells Bankers Worth of Its Dealers

DETROIT, May 15—Dodge Brothers has issued a pamphlet entitled "The Assets of a Dodge Brothers Dealer in Banking Terms," which, in an explanatory note by President F. J. Haynes, is declared to be "prompted by the desire to give the banker a true picture of Dodge Brothers endeavor to build for better business and, perhaps, thereby help the Dodge Brothers dealer, whose fortune Dodge Brothers realizes is most

ALL INDUSTRY SHOWN IN PROSPEROUS SHAPE

NEW YORK, May 14—The annual survey of the National Association of Manufacturers, in session here, shows industry prosperous and production increasing. This survey was taken throughout the basic industries in every industrial section of the country and is an immediate reflection of the present state of trade. Regarding automobiles and accessories, the survey says:

"Eighty per cent of the automobile men report present business as excellent; 10 per cent say it is good, while another 10 per cent class it as fair. None reports poor business. There is a labor shortage in 70 per cent of the factories, and wages have been increased in 98 per cent of those reporting. Ninety-five per cent of the reports show production increases of approximately 75 per cent, while nearly all report sales increases of about 80 per cent."

closely and inseparably linked with theirs, to be better understood and appreciated."

The pamphlet tells how carefully the company selects its dealers, how it helps the dealers become better merchandisers and business men; how to maintain service departments and how the company insists on proper financing methods among its dealers, etc. As the title of the pamphlet indicates, the booklet is intended to present the Dodge Brothers dealer to his banker in the proper light.

Blandin to Aid Whitford in Crude Rubber Survey

WASHINGTON, May 15—J. J. Blandin of Baltimore, formerly head of the rubber plantations' department of the Goodyear Tire & Rubber Co., has been appointed assistant chief of the section of the Department of Commerce which will conduct the crude rubber survey. He will assist H. N. Whitford.

Export statistics show that the seasonal activity in the tire trade in the Northern Hemisphere is largely responsible for the gain in the value of rubber exports.

Gradually improving economic conditions in many foreign markets is reflected in greater car registrations and increased business activity, all of which means that the export market for each class of rubber goods is constantly expanding.

STUTZ APPROACHES ALL 1922

INDIANAPOLIS, May 14—Stutz Motor Car Co. of America announces that retail sales of Stutz cars so far this year have almost equaled the total sales for the entire year of 1922.

W. B. Hurlburt Heads Detroit Motor Body

Walter Thompson to Manage New Company—Henry Brewster Will Be Designer

DETROIT, May 14—Detroit Motor Body Co. has been formed by a group of business men of Detroit and other cities, headed by William B. Hurlburt, former head of the Hurlburt Motor Truck Co., to build bodies for passenger car companies on a production basis. The company will take over the plant of the Andrew C. Sisman Co. here as a basis of operations, and plans the acquisition of other properties. Operations will start in four months.

The new company has a capitalization of \$10,000 preferred stock and 810,000 shares of no-par common.

Hurlburt is well known in the industry through being identified with the Packard Motor Car Co. in New York and as head of his own truck company, which has since been dissolved. Recently he was connected with William E. Metzger in the distribution of Wills Sainte Claire and Columbia cars in Detroit.

Thompson Has Wide Experience

He will have as his general manager in the new company Walter Thompson, who is well known in the body business in this country and in England, having been connected successfully with Thrupp & Maberly, London; Peerless and Cadillac, the J. C. Widman Co. and the Pullman company. Henry Brewster, Chicago, a member of the coach building family of that name, will be designer.

The Sisman company is a manufacturer of automobile bodies, supplying a number of companies in the medium-priced field.

Associated with Hurlburt are F. E. Moskovics, vice-president, Nordyke-Marmion Co.; Arthur A. Day, St. Louis; Harry Stormfeltz, Detroit; John M. Manly, Cincinnati; Andrew C. Sisman, Detroit; Charles R. Dunn, William P. Ternes, William E. Moss, J. P. McHugh, John A. Russell, Detroit; Fred P. Bennett, Ypsilanti, and John T. Woodhouse, Detroit. These, with Hurlburt and Thompson, will compose the board of directors.

Canadian Subsidiary Formed by G. M. Truck

DETROIT, May 15—The General Motors Truck Co. of Canada, Ltd., has been formed as a subsidiary unit to the General Motors Truck Co., to promote a more intensified selling movement in the Canadian provinces. The company will be located at Oshawa, site of the General Motors Corp. of Canada, and will have the resources of the latter in its sales work.

Tire Makers Absorb Most of Rubber Used

Industry Consumed 161,959,045 Pounds of Crude in First Quarter of Year

NEW YORK, May 14—Manufacturers of tires and tire sundries consumed 161,959,045 lb. of crude rubber in making \$156,908,226 worth of finished products in the first quarter of 1923, according to figures compiled by the Rubber Association of America.

Tire manufacturers consumed 83 per cent of the total of 195,097,797 lb. of crude rubber used in the quarter, the value of their sales being 67 per cent of the grand total of \$235,660,349 for the entire rubber industry.

When this business was done crude rubber was selling at about 36 cents a pound, while today it is quoted at 28 and 29. The association's quarterly report shows an inventory of crude rubber in the United States and afloat for American ports of 82,335 long tons on hand and 45,093 afloat on March 31, 1923.

The following figures are given in the report:

	Crude rubber used*	Value of manufactured products
Automobile and motor truck pneumatic casings	115,667,104	\$126,329,859
Automobile and motor truck pneumatic tubes	28,006,584	17,307,910
Motorcycle tires (casings and tubes)	271,151	410,194
Bicycle tires (single tubes, casings and tubes)	915,762	1,134,068
All other pneumatic casings and tubes not elsewhere specified...	15,240	11,797
Solid tires for motor vehicles	15,732,589	9,181,624
All other solid tires....	200,947	170,868
Tire sundries and repair materials.....	1,149,668	2,361,906
Total tires and tire sundries	161,959,045	\$156,908,226

*Pounds

The daily average number of employees in the rubber industry on the basis of the third week in January is 159,981.

DORT DROPS DETROIT BRANCH

DETROIT, May 15—Dort Motor Car Co. is discontinuing its Detroit branch and will hereafter distribute its territory in this district through the Detroit-Franklin Co. A. J. Shaw, who was manager of the branch, will be associated with the Franklin company, which is headed by E. G. Fuller, a veteran in Detroit automotive circles. Shaw will act as district manager for the Dort department of the new distributor.

ITALY TO USE TRUCKS IN CROSSING SAHARA

PARIS, May 4 (by mail)—An automobile expedition across the Sahara desert, with normal type 1½-ton pneumatic tired trucks is announced for next November. The Italian government, which is interested in this venture, has placed Ignace Florio at its head, with Marquis de Seta and Dr. Colombo as his assistants. It is intended to make exclusive use of Fiat 1½-ton trucks of a type very extensively used in the air services of the Allied armies during the war, without any special wheel or creeper track equipment.

These trucks have a four-cylinder engine of 100 by 140 mm. bore and stroke and are equipped with dual pneumatic tires on the rear wheels. They have already been used in the Sahara desert for establishing supply stations for airplane flights. Two preliminary convoys will be sent out to establish gasoline stations along the line of March.

The route will differ somewhat from that followed by the Citroen mission and will comprise a stage of 400 miles without water or supplies. A credit of 2,000,000 liras has been voted for the expenses of the Italian mission.

GMC Shipments Improved 184 Per Cent Over 1922

PONTIAC, MICH., May 14—Shipments of trucks by the General Motors Truck Co. were 184 per cent greater during the first quarter of 1923 than for the same period of last year, while orders received during the first quarter were 156 per cent higher.

During the first quarter the sales of branches of the company were 132 per cent more than a year ago, while the sales of distributors were 136 per cent greater.

The first quarter of 1923, it is said, is the fourth largest period in the company's history. Sales for April and reports from the field indicate that the month's totals will bring the volume of business above that of the first four months of any year.

The first three months of 1923 represent the second largest volume of business done during the first three months of any year, being surpassed only by the first three months of 1919.

MOON LEASES E-B PLANT

ST. LOUIS, May 14—The Moon Motor Car Co. has leased the plant of the Emerson-Brantingham Co., 2600 North Broadway, for the purpose of increasing storage and manufacturing facilities. The building is eight stories high with an aggregate floor space of 120,000 sq. ft.

Industry Will Check Commercial Reports

Government to Get Constructive Criticism from Men Best Able to Give It

NEW YORK, May 12—A plan for having automotive commercial reports checked by men in the industry was instituted here yesterday at a meeting of the Automotive Contact Committee, which is cooperating with the Automotive Division of the Bureau of Foreign and Domestic Commerce.

Reports coming to the Automotive Division will be sent to the secretaries of the various trade associations cooperating with the division. These secretaries in turn will submit each report to the men who are best qualified, through knowledge of the particular territory and the subject involved, to give constructive criticism of the data.

This method will not hold up publication of the information, but will result in amplified and improved trade reports on automotive conditions and trade practices.

M. H. Hoepli, acting chief of the Automotive Division, outlined the work of the division during recent months. This has included a survey of world registrations, surveys of taxicabs and taximeters, fire-fighting apparatus and service equipment. He stated that a survey is now under way to determine the preference of various foreign countries in relation to types of cars, accessories, paint, etc.

Plans for improving the Foreign Trade Manual were discussed.

Ford Buys Garnet Mine for Plate Glass Work

HILL, N. H., May 14—The Ford Motor Co., which has bought 200 acres of the most desirable garnet lands in New Hampshire, is now negotiating for the purchase of the undeveloped water power on Smith River at Profile Falls. It is said that an electric plant will be built here to supply power to the garnet mine at South Danbury, nine miles away.

The price paid for the garnet property is said to have been about \$600,000. The material will be used mostly for grinding and polishing plate glass.

TRAFFIC CENSUS BEING TAKEN

HARRISBURG, PA., May 15—A traffic census on all main roads in Pennsylvania has been started by the State Highway Department to ascertain the necessary types of construction on the various thoroughfares.

HUDSON INCREASES OUTPUT

DETROIT, May 15—Hudson Motor Car Co. states that sales and shipments in April totaled 9200 cars, while the May schedule calls for the manufacture of 9500. Inventories, it is said, are considerably lower than in previous years.

Men of the Industry and What They Are Doing

Jackson Handles Princeton Sales

E. B. Jackson, president of the Wills Sainte Claire Co. of New York, has retired from the retail selling field to become director of sales of the Durant Motor Car Co. of Muncie, Ind., making the Princeton car. Jackson is a veteran of the industry, starting with John Wanamaker when the latter handled Metropolitan sales of the Ford twenty years ago. Later Jackson served as manager of the Packard branches in New York and Philadelphia and was a vice-president in charge of sales of the Willys-Overland Co. two years ago. The New York representation of the Wills Sainte Claire will be taken over by W. J. Foss of Philadelphia, who has the Wills franchise in that city.

Kilpatrick Willys Assistant

William H. Kilpatrick, former manager of manufacturing at the Willys-Overland plant, has been promoted to the post of assistant to the president, John N. Willys. In his new capacity Kilpatrick will assist Willys in manufacturing plans at the Toledo factory and also at the associated plants. Kilpatrick has been associated with Overland since early in 1920. J. A. Sheldon, production manager, has been advanced to the position of works manager.

Case Promotes Witmer

J. S. Witmer, formerly southwestern division manager of the J. I. Case Threshing Machine Co., has been promoted to assistant general sales manager and has been succeeded as division manager by H. M. Thomas. Witmer first became identified with the company in 1902. He has been associated with the Winnipeg branch, of which he was manager, and with the Calgary branch which he opened.

In 1915 he began service as manager of the Des Moines branch and became division manager of the Southwestern division the following year.

Giauque Manages USL Advertising

E. D. Giauque has been appointed advertising manager of the U. S. Light & Heat Co., Niagara Falls, N. Y., succeeding William E. Brewster, who has resigned to join the advertising staff of the Christian Science Monitor, with headquarters in New York City.

Aborn Returns from Europe

C. N. Aborn, president of the Laminated Shim Co. of Long Island City, N. Y., returned on the Majestic from a three months' trip through Europe.

Wagner Established on Coast

Fred J. Wagner, starter of motor races, has decided to make his future home in Los Angeles, and in order to keep busy when away from speed events,

he has embarked in the automobile painting and refinishing business. Associated with him is A. C. Webb, automotive engineer, a former race driver and inventor. The organization will be known as the Wagner-Webb Co., Inc.

El Automovil Editor Returns

George E. Quisenberry, editor of *El Automovil Americano*, one of the Class Journal Co. publications, has returned from a visit to Havana, Cuba, where he went from New Orleans, after attending the Foreign Trade convention there.

Loomis Succeeds Fehling

O. W. Loomis has been appointed manager of the malleable plants at Chicago by the National Malleable Castings Co. He succeeds O. J. Fehling, resigned. The company also announces the appointment of James A. Slater as manager of sales, with headquarters at Cleveland, succeeding Loomis.

Burns With Szekely Company

L. N. Burns, for the last year sales manager of the La Crosse (Wis.) Plow Co. and previously vice-president of the J. I. Case Plow Works, Racine, Wis., for many years, has retired to become president and treasurer of the O. E. Szekely Co., Moline, Ill. O. E. Szekely, president, is promoted to chairman of the board. C. I. Josephson, son-in-law of Burns, is vice-president.

Dort Promotes Johnson

Courtney Johnson, formerly assistant sales manager, has been appointed assistant general manager of the Dort Motor Car Co. He has been a member of the Dort official family since 1915.

Dickinson Heads Adcraft Club

Frederick Dickinson, advertising manager of the Hupp Motor Car Corp., has been elected president of the Adcraft Club of Detroit. On the board of directors of the club are: B. G. Koether, advisory staff, General Motors Corp.; J. Fred Woodruff, general manager of Campbell-Ewald Co., and W. K. Towers, advertising manager of the Paige-Detroit Motor Car Co.

Coghlan with Moon of New York

Walter P. Coghlan, recently vice-president and director of sales of the Trexler Co. of Philadelphia, has been elected treasurer of the Moon Motor Co. of New York, devoting most of his time to wholesale sales and sales promotion work. Coghlan's record shows a long connection with the Klaxon Co. in various executive capacities, including that of sales manager, while prior to the Trexler connection he was general sales manager of the American Hammered Piston Ring Co. of Baltimore.

Mowe Back from Florida

John D. Mowe, vice-president and sales manager of the Kelly-Springfield Tire Co., who has been on sick leave for more than six months, has returned from Florida, convalescent. He has resumed his work at New York headquarters. Mowe is one of the veterans of the tire world, but since last June he has been obliged to forget business because of his health.

United Motors Names Ward

W. I. Ward, district manager of the Commerce Motor Truck Co. and formerly with Kelly-Springfield, has been named as district sales representative of the United Motors Products Co. of Grand Rapids, Mich.

Young Radiator Vice-President

F. M. Young has assumed the vice-presidency of the Racine Radiator Co. of Racine, Wis., successor to the Perfex Radiator Co. Young was associated with the Perfex company first as sales manager in 1919 and 1920 and later as manager. Last month Young and his associates purchased the Perfex company, Young becoming general manager in addition to holding the office of vice-president.

American Road Builders Elect Page as President

NEW YORK, May 15—The annual meeting of the American Road Builders' Association was held here this week, the election resulting in the choice of Frank Page, chairman of the North Carolina State Highway Commission, as president. James H. McDonald of New Haven, Conn., was elected treasurer.

In addition the usual number of vice-presidents from the various sections were chosen. The board of directors was reduced in number from thirty-three to twenty-nine and the secretary also was dropped from the board.

Profits of Seiberling Show Steady Increase

AKRON, May 15—According to W. A. M. Vaughan, treasurer the Seiberling Rubber Co., is in a position, without additional financing, to produce an \$8,000,000 volume of business during the current year.

With 2600 dealers handling Seiberling products, sales of \$479,000 in January, \$602,000 in February and \$613,000 in March are reported, with profits of \$14,000, \$56,000 and \$88,000.

Vaughan states that in 1922 sales totaled \$3,845,000, with \$56,000 profits, the first three months of the year being devoted largely to the re-equipment of factories.

Car, Truck, Tractor Factories All Busy

Greater Buying in Agricultural Districts Keeps Output at High Level

NEW YORK, May 14—Continued heavy output and strong demand continue to feature operations in the major automobile producing plants. Deliveries both of material and the finished product are better, due to an improvement in shipping facilities. Rail equipment is proving more adequate and additional boat service is helping to relieve the delivery situation.

May is proceeding at a rate that should establish a new record in the producing history of the industry. Manufacturers, however, stand ready to curtail schedules at the first indication of a slackening in demand, of which there is now no sign. Isolated cases of stocking of cars by dealers are due more to weather conditions that have held back the sale of open models rather than to any decline in buying interest.

Demand is still running ahead of output, a large proportion being for the closed type of car. This proportion has shown a steady increase, necessitating greater body making and plate glass manufacturing facilities, which are not yet sufficient to take care of current orders.

Export Business Good

While domestic sales continue at a high rate, the advance in foreign business is exceeding all expectations. Automotive products exported during March showed a marked increase in shipments and incomplete reports for April indicate that there was no decline during that month. While Central Europe remains an unimportant factor in present sales, the northern countries, England and nations of South America are buying largely and steadily.

The step-up in daily schedules taken by truck manufacturers is finding a duplication, to a certain extent, in the increased programs followed in tractor plants, the better conditions being due chiefly to greater buying activity in rural districts. Factories concentrating on tractors for commercial purposes report capacity operations, while those whose products are concerned principally with farm work show an advance in schedules toward the high point before farm buying halted abruptly. This year will mark a big step forward in restoring the tractor industry to its

7335 MILES ADDED TO FEDERAL ROADS

WASHINGTON, May 14—Federal-aid road building during the fiscal year beginning July 1, 1922, has progressed steadily toward the goal of almost 200,000 miles to be included in the Federal-aid highway system. On March 31, 7335 miles had been completed since the beginning of the fiscal year and with three months of good construction weather still remaining it appears that the 10,000 miles completed in the preceding fiscal year is to be at least equaled.

Not only does it appear that the best previous construction record is to be equaled, but the prospects are good for rapid progress in the coming fiscal year as on March 31 there were under construction 14,010 miles and slightly more than 10,000 miles in projects approved but not yet at the construction stage.

former footing just as it is proving in the case of truck manufacture.

Expansion of programs among truck builders is being retarded somewhat by the shortage of labor. Buses are being turned out in increasing volume, and there is a steady gain in railcar production. The development of passenger buses presents a most encouraging outlook for future activities in truck producing plants.

Parts makers are operating at high speed, straining plant capacity to meet the heavy demand. Excellent business for two months is in sight, and good prospects are evident for a steady run from that time on. Collections in this branch of the industry are uniformly good, reflecting the generally sound conditions among purchasers.

SPEEDWAY MANAGERS ORGANIZE

NEW YORK, May 15—The National Board of Speedway Managers has been formed to cooperate with the Contest Board of the American Automobile Association in arranging non-conflicting racing dates and ironing out any difficulties which may arise among speedway organizations. The A. A. A. Contest Board, however, still is in supreme control of the sport. A. M. Young of Los Angeles is chairman of the new body.

CLEVELAND EMPLOYMENT DROPS

CLEVELAND, May 16—The eighteen automotive concerns reporting to the committee on labor relations of the Chamber of Commerce place employment on April 30 as 11,410 persons, compared with 11,462 on March 31. The decrease of .5 per cent is the first decrease in this group since Dec. 1.

50,000 Citroen Cars Planned First Year

That Is, If American Arrange- ments Now Being Considered, Go Through

(Continued from page 1094)

we are an immense distance from the saturation point."

While bearing testimony to the immense development of the industry during the past few years, and while impressed with output, Citroen did not consider that American automobile factories were in every respect superior to those of Europe.

"Compared with our best works, the American factories are too crowded; aisles are congested to a point of inefficiency; there is too much artificial light," he declared. "Approaches to the factories are often poor, and shipping facilities are not of the best. As an instance, I timed an electric conveyor in the Ford factory which was held up ten minutes owing to congestion.

"Europe has a technical advantage over America, and it is inevitable in view of the handicap of big production which makes it difficult to change, even when the change has been shown to be an improvement. Front wheel brakes are just one example. We know they are right while the American industry is only just beginning to inquire if there is anything in them."

Citroen is of the opinion that there is no need for European manufacturers to be afraid of the American industry, even on their home market. "Ford, of course, could put his car on the French market at 500 francs and not feel the loss, but that is not business, and it is an eventuality which need not be considered. Our labor charges are equal to those of America; our overhead charges are a little lower; raw material is three to four times more expensive, but if exchange returned to normal and import duties were removed, the cost of raw material would be reduced, and we should still be able to compete with American cars in Europe."

W. F. BRADLEY.

Gearless Stock Sale Brings Indictment

PITTSBURGH, May 15—The Federal Grand Jury has returned an indictment against Frank E. McClintock, R. R. Starnes, Duncan McDonald and Paul Moscou, charging them with using the mails in a scheme to defraud and conspiracy in connection with the sale of stock in the Gearless Motor Corp. The action involves sale of stock for \$1,114,000 to many purchasers in western Pennsylvania, West Virginia and Ohio, according to Post Office Inspector George V. Craighead.

Value of Track Test Told by Duesenberg

Describes to Indiana Section of
S. A. E. Some of His
Experiences

INDIANAPOLIS, May 14—"Lessons in Engineering Learned on the Track" was the subject handled by Fred S. Duesenberg, chief engineer of the Duesenberg Automobile & Motors Co., at the May meeting of the Indiana Section of the Society of Automotive Engineers.

Duesenberg explained that it was almost impossible to get any definite data from racing because both drivers and mechanics often failed to make notes of the results of their experiments, so that questions he discussed were those that had come to his attention while handling racing teams.

Power on Block Not Decisive

In the course of his remarks, Duesenberg said:

In tackling racing problems as to carburetion or ignition, even the dynamometer does not always tell us what we want to know, and we often find that power on the block does not always mean speed on the track. I once sent a racing car to a laboratory. It developed 82 h.p. and permitted a road speed of about 110 m.p.h. Another trial showed 92 h.p. and only 105 m.p.h.

The laboratory made some changes and brought the horsepower up to 114, and could have added another 10 if we could have spared the time. But when we got out on the track the car showed no more speed than before, so we had to do some experimenting by changing the manifolding, which gave us the additional speed we were seeking.

Power developed on the block cannot always be used on the track. On the other hand the track has brought out ideas as to engine and chassis construction that can be used in production, but manifolding which is good for track work does not seem to offer much to the manufacturer. Lightening of axles and unsprung weight, however, first taught on the track, has had great influence on the general design of cars.

Lighter Rear Axle of Advantage

As an example of the advantages of lighter rear axles, Duesenberg told of sending a car after a record on the Sheepshead Bay track where a speed of 120 m.p.h. was necessary. Several trials were made unsuccessfully and it was noticed then that there was considerable wheel slip. It was figured out that if the weight of the rear could be reduced the wheels might stay on the track and the power be used to advantage. The axle was lightened 35 lb. and in the first trial, with the engine turning 3300 r.p.m. as against 3600 in the previous trials, it did 133 m.p.h. Using this light rear axle, new records were easily established.

On another track the experiment of fitting larger tires was tried. The driver could not notice any increase in

speed but the 33 x 5 tires smoothed the way and made a lower r.p.m. possible, so that one second was cut off the Indianapolis speedway lap time.

Duesenberg also told of the use of an offset crankshaft in the engine of the car driven by Jimmy Murphy in the French Grand Prix.

The latter part of the talk was given over to the subjects of manifolding, carburetion and compression. Sometimes a very small change in manifolding arrangements changes the speed, power and compression radically it was brought out.

Shipments Made Daily from Plant of Dunlop

BUFFALO, May 14 — Commercial production of tires is now well under way at the Dunlop plant here. Sales are being made through dealers and large numbers of tires are being shipped daily from the plant, where close to 1800 persons are employed.

Only cords are being manufactured. Thirteen sizes of passenger car tires will soon be available. Later the Dunlop company will produce solids for trucks.

Officials of the company are reluctant to discuss production figures until they are definitely established, but it is understood that 30,000 tires will have been made in the new plant by the middle of June.

The Dunlop property includes 214 acres. The plant is built on so large a scale that by the addition of wings to the present building space can be provided for 15,000 workmen. It will be a long time before this number of persons are employed, as the company is proceeding slowly in developing its American business.

Ford Produced 6615 Cars May 9, Exceeding Record

DETROIT, May 15—Ford production went over the 6600 mark May 9 when a total of 6615 was built, exceeding the former previous record day, May 4, by twenty-five. The twenty-eight assembly plants of the company are operating on an eight-hour day, which means that the record day's total represented the completion of a car every four seconds.

The Highland Park and River Rouge plants are operating on a 24-hour day basis, employing three shifts of men to meet the requirements of the assembly units. More than 100,000 men are now being employed in these two plants.

561,544 Sales in Four Months

DETROIT, May 10—From Jan. 1 to May 1 the Ford Motor Co. sold 561,544 cars and trucks in the United States, a daily average for the 120 days of 4680.

This is nearly twice the number sold at retail in the first four months of last year, which totaled 283,782.

Sales during April totaled 165,582 or 50,000 more than were delivered in the same month last year.

Indianapolis Race Entries Start Work

Millers, Durant Specials, Bugatti
and Fronty-Ford Arrive at
Speedway

INDIANAPOLIS, May 12—Real action started this week at the Speedway with the Millers and the Durant Specials arriving Tuesday, and the Bugatti car reaching rail sidings Friday. The Packards are not expected until about May 15.

Friday all the Millers and the Durants were at the track side, and Tommy Milton gave his bus one fast lap at 102 m.p.h. The Miller-built contenders have five types of tire sizes which will be tried out to discover just which meets the brick oval conditions. Some of the rail birds claim that 29 x 4½ front tires and 30 x 5 rears will be used, but 28 x 4, 32 x 4, 32 x 4½ and 33 x 5s may be chosen finally, as such sizes are in all the Miller-built kits.

The last year Durant Specials of 183 cu. in. are being cut down to 122 cu. in. displacement, and last minute designing of details and tire sizes and "pots" and other fixings are now receiving attention.

The Barber-Warnock Fronty-Ford, similar to the two "Fronties" that kept buzzing around the pole last year, has been in practice work with its 122 cu. in. pistons, and it was clocked at about 82 m.p.h. About a month ago Art Chevrolet had one of these jobs at the track before it was cut down, the racer doing a mile at about ninety on the straight-away at the back stretch. It is understood that this is the same cut-down job entered by Barber-Warnock, authorized Ford dealer of this city.

Fred Duesenberg's privately built and entered "Duzzies" are not yet out, but rumor says that next week will see them on the bricks. These cars were built by Fred Duesenberg during vacation time this year in a private shop not far from the Duesenberg plant.

Robert Bosch Offers Prize

NEW YORK, May 15—The Robert Bosch Magneto Co., Inc., of New York has offered \$1,800 in cash prizes for contestants in the Indianapolis 500-mile race. First place in the classic is worth an additional \$1,000; second place, \$500, and third place, \$300, provided the cars finishing in any of these positions are equipped with Robert Bosch magnetos.

George Robertson Coming

PARIS, May 5 (by mail)—George Robertson, one-time Vanderbilt Cup winner, will accompany the two Argentine drivers, Martin De Alzaga and Raoul Riganti, as team manager in the Indianapolis 500-mile race.

The men are sailing from here this week aboard the Majestic and are taking with them a couple of eight-ahead single seater French Bugatti cars.

Railway Body Rules Iowa Road Traffic

Under New Law, Commission Has Right to Regulate Motor Buses and Trucks

DES MOINES, Iowa, May 16—Inter-city motor carriers, hauling either passengers or freight, will be placed under the supervision of the state railway commission in accordance with an act passed at the session of the Iowa legislature which just closed.

This law will have an important bearing upon all motor bus and motor truck business which during the past few years has grown steadily in Iowa. A ton-mile tax of one-eighth cent per mile for all such carriers equipped with pneumatic tires is to be collected and one-fourth of one cent per ton-mile for all carriers equipped with solid tires. The tax is to be computed from monthly reports of mileage and based upon the maximum capacity.

The tax is to be collected by the county treasurers each month and is to be used for maintenance of the roads over which the carriers travel. Under the regulatory powers fixed by the bill the railroad commission is given the right to prescribe rules for the operation of buses and trucks for the protection of the public, and is also empowered to investigate and regulate rates.

Every motor carrier will be required to secure a certificate of authorization before starting the operation of his vehicle.

The law is specifically worded to include gasoline trucks which operate over fixed routes but exempts trucks engaged in hauling farm and dairy products.

The bill was strongly opposed by the motor trades interests of the state on the grounds of unfairness.

Michelin Tire Protests French Road Test Ruling

PARIS, April 28 (by mail)—The Michelin Tire Co. of Clermont-Ferrand has lodged an appeal with the Supreme Council against the action of the local authorities in forbidding automobile road tests. Under a national law Prefects are now authorized to take measures to forbid chassis testing on the highway, or to grant special permits for testing on certain roads and at certain hours.

A decree of this nature was issued by the Prefect of the Allier district, and in consequence the police took action against drivers of Michelin automobiles carrying out tire tests in the neighborhood of the factory.

HENDEE REPORTS BIG DEMAND

SPRINGFIELD, MASS., May 15—J. B. McNaughton, sales manager of the Hendee Manufacturing Co., has returned

from an eight weeks' trip across the continent and brings back a decidedly favorable report on trade prospects. The demand for cycles has been so unexpectedly heavy this spring that nearly all dealers are behind in filling orders, but the factory is striving to keep shipments within two weeks of sales, which is generally the best that can be done at present. Business is reported as rather better on the Atlantic and Pacific Coasts than in the interior.

Winton Building \$4,250 Five-Passenger Coupe

CLEVELAND, May 12—The Winton Co. has brought out a new five-passenger coupé to sell at \$4,250 with several novel features in body design. The front seats follow what has come to be standardized practice in a car of this type, the chairs being separate and the right seat folding forward.

However, in this design the driver's seat also tilts forward over the steering wheel so that entrance to the rear seat is possible from either side of the car. The pitch of the driver's seat is also adjustable by means of adjusting nuts, and the seat can be moved approximately 1½ in. backward or forward without disturbing the upholstery. The two front seats are 18 in. wide and 19 in. deep.

The rear seat is 47 in. wide and 19 in. deep and seats three persons. A well has been made in the floor, the cover of the well hinging forward to form a foot rest. When the well is closed, the floor is flat.

G. M. Furnishes Express Bodies with Ton Truck

PONTIAC, MICH., May 15—The General Motors Truck Co., which for a number of years has been manufacturing truck chassis without bodies, is now furnishing open express bodies on the 1-ton units.

These express bodies can be had with or without the top and with either an open or a closed cab. The finish is in a deep shade of green, the chassis being drab green. There will be no change in the policy of the company in furnishing chassis alone in all models, this body being put out as a standard proposition to eliminate delays necessary in having special bodies built.

U. S. Tractor to Build Truck Under New Plans

MENASHA, WIS., May 14—The U. S. Tractor & Machinery Co., manufacturing the Uncle Sam tractor, has changed its corporate style to Wisconsin Automotive Corp. and is about to place in production a motor truck design, together with vehicles for tractor combinations and for heavy duty hauling. It is reported that the manufacture of a passenger car and passenger bus design is also embraced in the general expansion plan.

Step to Standardize Hardwood Progresses

Sub-Division of S. A. E. Committee Handles Automotive End of Movement

DETROIT, May 14—Progress is being made on the standardization of hardwood lumber as used in the automobile body industry. This standardization work is part of the lumber standardization program started as a result of a conference held in Washington at the request of Secretary of Commerce Hoover.

At that time the central committee of lumber standards was organized to formulate American standards for the sizes of lumber and method of grading to help in the conservation of lumber by the elimination of waste, due to present practices.

The central committee represents the lumber producer, jobbers, consuming interest and national engineering societies. The Society of Automotive Engineers is represented on this committee by R. E. Brown of the Fisher Body Corp.

The work on hardwood lumber standardization as it affects the automobile industry is being handled by a sub-division of the passenger car body division of the S. A. E. Standards Committee. The sub-division has been appointed to handle the gathering of specific data from the body builders. This committee is being assisted by the Hardwood Manufacturers' Institute, represented by F. F. Murray, and the Forest Products Laboratory, represented by A. T. Upson.

Requirements Being Surveyed

At present there are two representatives of the Forest Products Laboratory engaged in work at the body plants in Detroit, making a survey of the hardwood lumber requirements of these companies. Their idea is to work out plans that may be extended to other body companies in determining requirements of the automotive industry for factory cut-up sizes of hardwood lumber for body framing.

The personnel of the hardwood lumber sub-division is as follows:

G. J. Mercer, chairman; R. E. Brown, consulting engineer, Fisher Body Corp.; R. A. LaBarre, Towson Body Co.; T. J. Little, Jr., Ford Motor Co.; F. F. Murray, Hardwood Manufacturers' Institute; J. E. Schipper, the Class Journal Co., and A. T. Upson, Forest Products Laboratories.

OLIVER RIM SALE ORDERED

ATLANTA, May 15—Sale of the property and plant of the bankrupt Oliver Rim Co., manufacturer of automobile rims, has been ordered by the Federal Court, after a hearing on a petition by the stockholders of the company. The property includes real estate, buildings and rim manufacturing machinery. No bid under \$115,000 will be accepted, the court ruled.

BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

Payments by check for the week ended May 9 totaled \$9,527,000,000, a decrease of more than a billion and a half dollars from the exceptionally large total of the week before. This total is larger by 5 per cent than debits for the corresponding week in 1922. These figures are compiled from returns of 244 reporting centers to the Federal Reserve.

Although March operating revenues of the Class I railroads increased 13 per cent over March last year, the operating expenses increased at a greater rate, with the result that 5.84 per cent was earned on the tentative valuation, as compared with a return of 5.96 in March last year. Total operating revenues for the month were \$535,541,000, the net being \$117,628,000.

The prosperous condition of business has stimulated the formation of many new enterprises. The organization of 1014 new companies in the country during April with a total authorized capital of \$1,006,258,300 was reported. This is the largest total since January, 1921, when 1125 companies, representing an aggregate capitalization of \$1,243,400,200, were organized.

Bradstreet reports building permits in April for 151 cities totaling \$319,134,433, as compared with \$369,267,939 for the identical cities in March, a decrease of 13.6 per cent. The March total was considerably above any previous monthly record. The increase of building over a year ago in the same cities amounts to more than 50 per cent. In New York City announcement has been made that work on several large undertakings has been suspended and will not be completed until costs are more nearly normal.

Car loadings in the week ended April 28, 963,694 cars, were the largest number for any week this year, and exceeded by 212,583 cars, the loadings for the corresponding week last year. For seventeen weeks of 1923 total loadings are 14,994,386, against 12,783,406 last year, 11,838,547 in 1921, and 11,605,109 in 1920.

The interest rate on mercantile paper last week remained unchanged at 5 to 5½ per cent.

Stockholders Ratify Frame Merger Plans

(Continued from page 1095)

principal business is the manufacture of automobile frames and other heavy automobile stampings.

The combined companies are now doing a volume of business at the rate of \$17,000,000 to \$18,000,000 a year, and are favorably located geographically, both as to source of raw material and market for finished product. This gives the company a decided advantage in respect to freight rates on finished products.

The condensed balance sheet of the Midland Steel Products Co. is as follows:

ASSETS

Current:	
Cash, including proceeds from bond issue, etc., not otherwise applied	\$921,130
Customers' notes and accounts receivable (less allowance for doubtful)	891,695
Inventory	1,030,365
	\$2,843,191
Other Assets:	
Miscellaneous accounts receivable, advances, etc.	\$81,385
Inventory held for sale under special agreement	70,715
	\$152,100
Permanent:	
(As appraised as of Dec. 31, 1922, in respect of Parish & Birmingham Corp., and as of April 1, 1923, in respect of Detroit Pressed Steel Co.)	
Land	\$622,360
Buildings and improvements ..	2,090,340
Machinery, equipment, etc.	2,901,759
	\$5,614,460
Patents and good will (book value) ..	1,675,000
Deferred:	
Unamortized financing expense, deferred factory expenses, unexpired. Insurance premiums, prepaid taxes, etc.	\$359,280
Total assets	\$10,644,032

LIABILITIES

Current:	
Accounts payable — purchases, expenses, etc., net	\$642,636
Accrued state and county taxes ..	169,283
	\$811,924
First Mortgage 7 Per Cent Sinking Fund Convertible Gold Bonds:	
Due May 1, 1938	2,500,000
Reserves:	
For Federal taxes and contingencies	315,000
Nominal:	
Capital Stock—	
Preferred—8 Per Cent Participating Cumulative—	
Authorized	\$10,000,000
Less unissued	3,000,000
	\$7,000,000
Common—No Par Value—	
50,000 shares authorized and issued declared common capital	\$5,000
Surplus	12,103
Total liabilities	\$10,644,032

Connecticut Telephone Acquires Nearby Plant

MERIDEN, CONN., May 14—The Connecticut Telephone & Electric Co. has purchased the plant of the Wilcox & White Co., maker of player-pianos, which recently went into the hands of a receiver.

The plant is located near the No. 1 plant of the Connecticut company.

FINANCIAL NOTES

A. O. Smith Corp., Milwaukee, manufacturer of pressed steel frames and pressed steel and forged parts, has called for redemption on June 4, 1923, \$2,428,000 outstanding five-year 6 per cent gold notes due Oct. 1, 1923 at 101 and accrued interest to date of surrender. It is issuing \$5,000,000 of ten-year first (closed) mortgage 6½ per cent gold bonds, dated May 1, 1923, with provision for a semi-annual sinking fund to retire approximately \$2,000,000 of bonds during the life of the issue by purchase or call. It is stated that the proceeds will be used to redeem the outstanding five-year notes, for completion of extensions to plant, for new equipment and for additional working capital to be required in connection with the increased productive capacity. The First Wisconsin Trust Co., Milwaukee, is trustee.

Reo Motor Car Co. has declared an extra cash dividend of 6 per cent and a stock dividend of 10 per cent. In addition, the regular quarterly payment of 1½ per cent has also been declared, all dividends being payable July 2 to stockholders of record May 31.

American Chain Co. and its subsidiaries report that for the first three months of 1923 profits of \$882,890 have become available for dividends. This does not include the profits of the English subsidiary. Gross sales for the quarter were \$7,225,468 as against \$2,981,856 in the same period last year and \$17,565,110 in the full year 1922. Earnings for the first quarter of 1923 were equal to four and one half times the fixed dividend requirements of the company's 8 per cent cumulative participating Class A stock now outstanding.

Borg & Beck Co. reports for the four months ended April 30 net of \$228,258, after charges but before taxes as against \$98,196 in the corresponding period in 1922.

Oilgear Co. of Milwaukee, manufacturing a line of hydraulic presses and other metal-working tools and equipment, has recently increased its capital stock to \$500,000 preferred and 5000 shares of common without par value. Additional floor space has been taken over to double the size of its plant.

New York Transportation Co. reports that profits in 1922 amounted to \$1,141,059, equivalent to \$1.65 per share on voting trust certificates of the Fifth Avenue Bus Securities Corp.

Victor Rubber Co., Springfield, Ohio, announces that the net sales for the first quarter of the year amounted to \$489,000 and that net operating profits, after depreciation and interest charges, aggregated \$48,000. The earnings for the first quarter represent 75 per cent of the total average annual earnings over a period of five years.

Sparks-Withington Co. has restored the common stock to a dividend basis by the declaration of a quarterly dividend of 50 cents and also an extra dividend of 25 cents per share on the common in addition to the regular quarterly dividend of 1¼ per cent on the preferred, all payable July 1 to stock of record June 15.

BLANK CHECKS STOLEN

NEW YORK, May 15—A bulletin issued by the American Bankers Association states that a book of blank checks has been stolen from the Chevrolet factory, the numbers being 11-2101 to 11-2150.

Ford Again Operates Old Assembly Plants

Demand Necessitates Greater Factory Facilities Than in Use
in 1922

DETROIT, May 15—The Ford Motor Co. has reopened several assembly plants which have been discontinued for some years and also has made important additions to other plants and equipment to permit larger assembly capacities, because of inability to meet demand with plants and facilities as operated in 1922.

The most important of the old plants reopened is the Cleveland branch which has been unused for assembly since 1918. This plant has now been re-equipped and is assembling cars at the rate of 150 daily. Those in Denver and Portland, Ore., have also been reopened as assembly branches with a daily production of 150 and fifty cars respectively.

General arrangement of several departments at the Atlanta assembly branch has increased the daily schedule there from 150 to 210. Railroad tracks formerly run inside the building have been removed, and the assembly line set in its place. Other construction and equipment work, now under way, when completed in June will increase the capacity to 250 to 275 cars daily.

At Cambridge a new layout has increased capacity to 300 cars daily. The Indianapolis branch has a capacity now of 300 daily, the chassis assembly line being extended with an overhead exhaust system which permits testing cars on the assembly line. At Louisville a new one-story addition has been built, with chains in the assembly line. Production has been increased from 100 to 150 cars daily. Enameling ovens have been installed or increased in capacity at twelve branches recently.

All branches report business conditions excellent. The Cincinnati branch reports urgent bona fide orders on hand numbering 10,000, as compared to 2000 on file a year ago.

Earl Starts Producing Its New Sport Phaeton

JACKSON, MICH., May 16—A new Earl sport phaeton is now in production, selling at \$1,275. It carries five passengers, has all nickel head lamps with dimmers, cowl parking lamps, signal tail lamp, two windshield wipers, Moto-Meter with ornamental radiator cap, double bar bumpers in front and rear, disk wheels and visor.

A large size trunk is carried on the rear. The finish is in ultramarine blue, the upholstery being in genuine long grain glossy black leather with a special top to match.

DUNLOP TO USE BRANCHES

BUFFALO, May 15—Branches will play an important part in the marketing plan of the Dunlop Tire & Rubber Co.,

which opened its retail commercial campaign a week ago. The Buffalo branch already is open and by the middle of June branches in Boston and Philadelphia will be in operation. Shortly after the market will be broadened to include Cleveland, Chicago and the Southern territory. In nearly every case the main factory branch will be supplemented by sub-branches.

INDUSTRIAL NOTES

Johns-Manville Co. is tripling its factory space and quadrupling its general offices in order to take care of business. The conditions in the automobile industry are responsible largely for the expansion.

Milwaukee Commercial Auto Body Co., Milwaukee, has changed its corporate title to Benzick-Schulner Body Co., and while making motor truck body equipment a feature, will engage in additional lines identified with the industry.

Westinghouse Electric & Manufacturing Co. reports that production of small motors is 300 per cent greater than a year ago, with no early abatement in prospect. Work on automotive equipment is ahead of a year ago.

OBITUARY

THOMAS M. SECHLER

MOLINE, ILL., May 12—Thomas M. Sechler, eighty-two years of age, dropped dead in his home May 7, following an attack of apoplexy. He was president of the Sechler Implement & Carriage Co.; president of the Moline Body Corp., and vice-president of the Mutual Wheel Co.

D. W. VOORHEES

PEORIA, ILL., May 12—Daniel Webster Voorhees, vice-president and general manager of Luthy & Co., farm implement jobbing company, and president and general manager of the Peru Plow & Wheel Co., died Monday at his home here after three months' illness, resulting from an attack of influenza.

T. H. SIMPSON

DETROIT, May 12—T. H. Simpson, president and treasurer of the Michigan Malleable Iron Co. and the Michigan Sprocket Chain Co. and a well-known figure in the automotive industry and the iron trade, died here after a year's illness. He was sixty-four years old and had been a resident of Detroit for the last forty years.

FRANK E. WING

ATHOL, MASS., May 14—Frank E. Wing, secretary and treasurer of the L. S. Starrett Co. of this city, manufacturer of automobile tools and machinery, died here yesterday after a long illness. He had been identified with the Starrett company since 1887. He was also secretary of the Athol Machine Co.

METAL MARKETS

A sort of "the party is over" attitude is in evidence in some quarters of the steel market. Very little in the way of new commitments is under negotiation, and buyers of even small tonnages are more or less in a bargain-hunting frame of mind, which means that, with sellers standing pat on base-prices, new orders are few and far between. As usual, some of the "fancy" prices mentioned in the trade during the height of the flurry have turned out to be conversational rather than actual. A few days ago, when the tonnage rates of union sheet mill workers, operating under a sliding wage scale agreement, were advanced 3 per cent for the May-June period, it was learned that this advance was based on an average price of 3.40 cents for 26, 27 and 28 gage black sheets shipped during the 60 days ended April 30.

Even granting that the bulk of this tonnage consisted of orders placed earlier in the year, it will be readily seen that much higher prices for sheets were talked of than actually paid in representative transactions. Of course, a good deal of relatively high-priced steel awaits production and shipment, but the general impression is that the market will continue on its present even keel until this steel has passed into consumers' hands, and that there is not likely to be in evidence any great disparity between the prices at which steel is being shipped and those at which new orders can be placed, at least not in the immediate future.

There is no doubt that full-finished automobile sheets could be bought at more modest figures than those which prevailed in some of the transactions that were closed during the peak of the flurry. Postponement of shipments is said to have been asked by some passenger car builders on account of "uncertainty of design for 1924 models," but, as a general condition, automotive consumers appear to be taking all the steel for which they have furnished specifications. There has been, however, a lessening, not only among automotive consumers but among steel consumers generally, of the haste with which steel is wanted, and specifications are slower in coming through, while, for a time, they actually accompanied tonnage commitments.

Pig Iron.—Prices quoted in the press are strictly nominal. The market is virtually idle, and there is no telling what it would be if it were tested. Blast furnace interests are somewhat divided in their outlook upon the situation. There are those who believe the time has come when it is most profitable to sit tight. Others show a certain anxiety for business, but are loath to cut prices. Some time will very likely pass before a new price level will be worked out. Automotive foundries are well supplied for their near-by requirements.

Aluminum.—The aluminum market is about the only non-ferrous department but little affected by the slump that has been in evidence of late. This is chiefly due to the scant supply of foreign aluminum. The possibility of securing aluminum ingots and sheets from the Grevenbroich plant in Germany has been reduced to nothing. The Swiss producers of Neuhausen refuse to accommodate the Germans with supplies. Taking over of the Høyangerfaldene aluminum plant in Norway by the Aluminum Company of America is much commented on by the European trade press.

Copper.—While the red metal is in the doldrums, there is no telling what may happen in the near future.

Calendar

SHOWS

Sept. 1-7—Chicago, National Transportation Exhibition, under the auspices of Motor Truck Industries, Coliseum and Annex.

Nov. 4-10—New York, First Automobile Exposition of the Foreign Automotive Association, Hotel Astor.

FOREIGN SHOWS

May 9-June 12—Gothenburg, Sweden, International Automobile Exhibition, Sponsored by the Royal Automobile Club of Sweden.

Oct. 4-14—Paris, Passenger Cars, Bicycles, Motor-

cycles and Accessories, Grand Palais.

Oct. 15-20—London, Motorcycle Show, Olympia.

Oct. 24-Nov. 2—Paris, Trucks, Agricultural Tractors, etc., Grand Palais.

Nov. 1-15—Buenos Aires, Annual Automobile Exposition, under the direction of the Automovil Club Argentino.

Nov. 2-10—London, Automobile Show, Olympia.

Nov. 22-Dec. 1—London, Motor Transport Exhibition.

RACES

May 30—Indianapolis, Eleventh Annual 500-mile International Sweepstakes.

July 2—Tours, French Grand Prix 500-mile race.

Oct. 28—Barcelona, Spain, Grand Prix for vehicles of 1500 c.c.; Nov. 1, International Grand Prix for cycle cars of 1100—Nov. 4, International Grand Prix for two liter.

CONVENTIONS

Oct. 24-26—Cleveland, Thirtieth Annual Convention of the National Association of Farm Equipment Manufacturers, Hotel Statler.

Nov. 12-17—Chicago, Annual Business Exhibit and Convention of the Automotive Equipment Association, Coliseum.

S. A. E. MEETINGS

June 19-23—Summer Meeting of the S. A. E.—Spring Lake, N. J.

Oct. 25-26—Production Meeting of the S. A. E.—Cleveland.

Jan. 1924—Annual Meeting of the S. A. E.—Detroit.

MEETINGS

June 14-15—Bethlehem, Pa., Eastern Sectional Meeting of the American Society for Steel Treating, Hotel Reservations made through George C. Lilly, Superintendent of Heat Treatment, Bethlehem Steel Co., Bethlehem.

June 25-July 1—Dixville Notch, N. H., Summer Meeting of the Automotive Equipment Association.

Low Prices Expand Sales in Colombia

BARRANQUILLA, COLOMBIA, April 28 (*by mail*)—Automobile sales have expanded materially in both Barranquilla and Cartagena. One of the leading firms, handling two well-known makes of low and medium priced cars, sold here and in Cartagena during the first quarter of 1923 nearly half as many new cars as were sold during all of 1922. Within the last few days this company also has imported a fleet of eight trucks which will be put into motor bus service here, these being one-ton models of a make which lists at approximately \$1,300.

Numerous new bus services are being opened here along both the eastern and western highways and an estimate is that about sixty buses are in operation. Further extension of these services is expected, as they are performing an excellent and much needed work.

The present low prices of automobiles has done much to bring about the present promising outlook. Certain of the more important local automotive companies have made great efforts to bring down costs to a point as low as possible and this has been strengthened by the installation of good stocks of repair parts.

Furthermore, the greatly decreased price of gasoline, brought about by the exploitation of Colombian petroleum fields, has greatly stimulated operation. Gasoline is now selling at \$.40 a gallon in Colombia, as compared with from \$.80 to \$1.50 as formerly.

MEXICAN LEVY BASIS CHANGED

WASHINGTON, May 14—Telegraphic dispatches from Mexico City state that the import duty on certain automotive products has been changed from a specific to an ad valorem basis, effective April 13. The change is from 1.50 pesos per gross kilo to 20 per cent ad valorem. The items affected include bodies and separate parts, not specified, for all classes of automobiles; engines for auto-

mobiles, repair parts for engines, and other parts composing the propelling mechanism of the vehicles.

Taxation System Changed by Belgian Government

PARIS, May 2 (*by mail*)—In place of an annual State tax of 12 francs per horsepower, the Belgian government has now adopted a tax of 30 francs per horsepower, and in addition a fixed tax on the value of the automobile.

For a car selling new at 25,000 to 40,000 francs, the tax is 250 francs; from 40,000 to 60,000 francs, 400 francs; from 60,000 to 80,000 francs, 600 francs; from 80,000 to 100,000 francs, 800 francs, and above 100,000 francs the amount is 1000 francs. Depreciation is allowed at the rate of 10 per cent each year.

For trucks the fixed tax is 25 francs per 100 kilograms. When solid rubber tires are used the tax is increased 50 per cent, and with metal tires it is doubled.

Shifts Made in Dates for Shows in London

LONDON, May 4 (*by mail*)—The order of dates for the car, truck and motorcycle shows at Olympia this year has been varied from that originally planned and from that adopted in previous years. Instead of the truck show being held in October and the motorcycle show overlapping November and December, the order is to be reversed, and the dates are now as follows:

Motor Cycle Show, Oct. 15 to 20.

Car Show, Nov. 2 to 10.

Truck Show, Nov. 22 to Dec. 1.

In connection with the truck show, a section of the now considerably enlarged Olympia will be devoted to an exhibition of road plant, machinery and materials, and the whole will be officially termed the Motor Transport Exhibition instead of Commercial Motor Show, as previously.

Houdaille Tops List in Belgian Contest

PARIS, May 2 (*by mail*)—In the annual Belgian shock absorber competition Houdaille won first place, with J. M. second. In the elastic shackle section first prize was awarded to J. M. D., and second to the Mamet appliance. In the division for appliances replacing normal leaf springs the Messier system was classed first, with the British apparatus shown by the A. F. S. Development Co. in second place. A Buick won first prize among cars with standard type of springing.

These tests were held on a rough stretch of road in the neighborhood of Brussels, over which the competing cars had to be run, behind a pilot car, at a speed of 31 to 34 m.p.h. Oscillations were enregistered on the diagram of an appliance invented by Engineer Mathot of the Technical Division of the Royal Automobile Club of Belgium.

In addition, personal observations were made by members of a technical committee who both watched the cars from the road and were passengers in them, and account was also taken of cost and appearance of the appliance. To secure a proper basis of comparison, the appliances were fitted on 10 hp. Citroen and four-cylinder Buick cars.

The competition showed that the best results were obtained with a hydraulic type of shock absorber operating in one direction only. In some cases there was lack of uniformity between the results shown on the diagram, the observations of the jury and the impression of the passengers.

BRAZIL MAY DROP RUBBER TAX

NEW YORK, May 14—At the luncheon of the Brazilian Chamber of Commerce, held in this city, a cable was received and read by a representative of the Brazilian Government, predicting the elimination of the production and export tax on rubber from Para, Brazil.